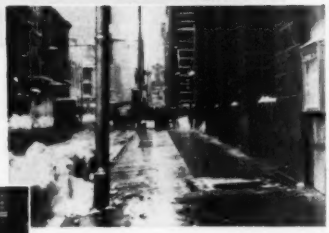
ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

Plan your Byers snow melting now!



What it did last winter for others— it can do this winter for you!

How Byers Snow Melting Systems came through last winter's record breaking snowfalls is graphically shown in the above illustrations. These pictures are typical of the successful results of this modern snow removal system in a wide variety of applications. Coils of Byers Wrought Iron pipe, embedded in sidewalks and driveways and carrying hot water-anti-freeze solution, made the heaviest snow vanish magically as it fell.

Satisfied users everywhere are constantly adding new chapters to the snow melting success story. Householders find it both economical and convenient. Industrial plants use snow melting to keep loading platforms and access roads hazard-free. Stores, hotels and service stations have cut excessive snow removal costs and enjoy increased patronage. This ever-increasing acceptance is supported by remarkable records like those above.

Byers Wrought Iron pipe is ideally suited for this service because of its combination of essential qualities. Its corrosion resistance has been repeatedly proven. Its heat emission is high. It is easily formed and welded. It expands and contracts at virtually the same rate with concrete. And it has ample mechanical strength to withstand damage during installation.

Our bulletin, BYERS WROUGHT IRON PIPE FOR SNOW MELTING SYSTEMS, covers the design, installation and operation of snow melting. Write for your copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.

WHY GENUINE WROUGHT IRON LASTS

This notch-fracture test specimen illustrates the unique fibrous structure of genuine wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

This advertisement appeared in leading newspapers September 12. It is the first of a series in behalf of a modern highway system.

We Must Face the Highway Crisis Now

—*there is only one real cure!*

ONE of the greatest home-front threats to the welfare of every American is the congestion on our highways today.

It is not only a menace that costs thousands of lives in needless accidents and millions of dollars in wasted time every year—*it is a peril to national security!*

Without motor transportation the nation would stagnate. It has become the lifeblood of America's economy. The highways are its arteries—and they are hardening fast!

Remember these facts

Motor transport now carries 80% of all interstate passenger traffic – takes more than 50% of all workers to their jobs.

It speeds 90% of all foods to market—hauls 75% of all general freight.

It is the swift plant-to-plant conveyor of raw materials, parts and subassemblies that keeps America's mass-production lines going—that makes America's unprecedented prosperity possible.

Roads are the bottleneck

To keep America moving today requires the daily use of almost FIFTY MILLION motor cars, trucks and buses – more motor vehicles than all the rest of the world possesses!

Yet this vital transport system is now jam-packed into an obsolete highway system—*most of it designed pre-war to comfortably accommodate less than half today's vehicular mileage!*

And motor registrations have been soaring since the war at the rate of 3.7 million per year.

We should have action NOW!

We cannot cut this Gordian knot by restrictive laws. The crux of the problem is not the number of cars or the size of trucks—*it is too few modern roads!*

To keep our nation mobile, we must start building a new national highway system now, designed for modern traffic needs and speeds.

Such a modern road system is essential to our prosperity and vital to our defense in this atomic age. And we have the world's most efficient road-building industry equipped to construct it in less time than ever possible before.

The time has come when we must do something about better roads besides talk. The demand for action must come from everyone who uses the highways—and that's just about everybody.

P. W. Litchfield

Chairman of the Board
THE GOODYEAR TIRE & RUBBER COMPANY, INC.

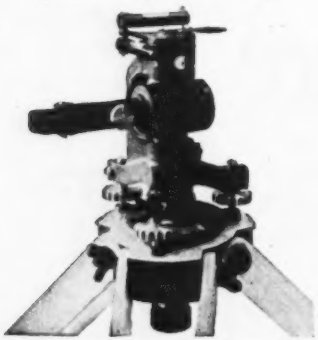
GOODYEAR
THE GREATEST NAME IN RUBBER

BERGER
solves another Engineering problem

Fast accurate measurement on long vertical sights

sight upward and downward with extreme accuracy

without altering position of instrument



- **Align elevator shafts accurately, speedily . . .**
- **Test movement of top of tall buildings or bridges during high winds . . .**
- **Align suspension bridges; set piers, canal locks . . .**
- **Transfer terminal mark of baseline to end-mark of tape and vice versa . . .**
- **Take necessary sights in mine shafts . . .**
- **Transfer ground control points to top of high street towers or bridge structures . . .**
- **Set turbines and generators . . .**

Virtually indispensable in first order triangulation

Tested and proven over years of service, BERGER vertical collimators have solved the problem of accuracy and time-saving where vertical sights are crucial in construction. The process is direct—NO TRIAL AND ERROR.

THIS COUPON BRINGS DATA

1025a

C. L. BERGER & SONS, INC.
37 WILLIAMS ST.
ROXBURY, BOSTON 19, MASS.

Send me information on the vertical collimator.

Name .....
Title .....
Company .....
Address .....
City ..... Zone ..... State .....

ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 147 OCTOBER 25, 1951 No. 17

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Prestressed block beams span 43 ft 30
Prestressed roof beams get first U. S. tryout 32
Brooklyn Bridge rebuilt for today's traffic 33
Thin flat-slab floor span long bays 36
Field house for champions ..... J. D. Griffiths 39
New sounding tool explores Quoddy sites 43
Perspective—How they handle barges in the Ohio Valley 112

DEPARTMENTS

Construction Week 17
Construction Trends 19
Editorials 21
News of the Week 23
Legal Decisions 40
International 47
Municipal 51
Meetings 57
Men and Jobs 58
Education, Research 62
Obituaries 65
Labor 66
Construction Business 69
Unit Prices 73
Construction Reports 76
New Products 100

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57

A NUMBER THAT SPEAKS FOR ITSELF!

AND it's a number that speaks for the opinion of Blythe Brothers Co., also. It is an indirect guarantee to every prospective Northwest purchaser that Northwest equipment is money making equipment to own. Successful contractors keep successful with proved equipment.

It will pay you to plan ahead to own a Northwest. Talk to a Northwest man about it.

NORTHWEST ENGINEERING COMPANY
1502 Field Building, 135 South LaSalle Street
Chicago 3, Illinois

NORTHWEST
CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

TREATED WOOD *lasts longer!*

Wood that is PENTA*-PROTECTED *lasts* up to four times longer than untreated wood. PENTA-PROTECTED wood is safe from termites and rot.

Plan to use PENTA-PROTECTED wood not only for construction timber, but in building flooring, roofing and trim. PENTA leaves wood clean and easy to handle . . . will not leach. Installations built with PENTA-PROTECTED wood need less maintenance, making PENTA-PROTECTED wood less costly in the long run.

Make your wood a profitable investment! Use PENTA-PROTECTED wood.

(*PENTA is a popular abbreviation of the name of the chemical, PENTAchlorophenol.)

Write Dow, Dept. PE-68A, for further information and free booklet, "Pointers on PENTA."

Make construction last . . . build with Penta -PROTECTED wood!

THE DOW CHEMICAL COMPANY • *Midland, Michigan*

DOW

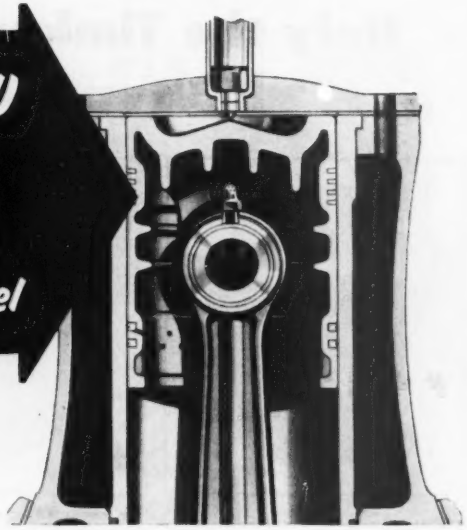
Penta

chlorophenol

MURPHY GIVES YOU

MORE ECONOMY
SMOOTHER OPERATION
GREATER DEPENDABILITY
EASIER STARTING

because it's a "True" Diesel



ILLUSTRATED at the right in cross section is the combustion chamber of the Murphy Diesel. Note that it is plain and open with no artificial devices to effect combustion. In operation, completely atomized liquid fuel is sprayed directly into all parts of the air charge by means of the unit injector located in the center of the combustion chamber. Since the fuel burns immediately upon injection into the incandescent air charge, combustion is controlled solely by the unit injector, which in turn is precisely controlled by the hydraulic servo-type governor. This is "true" diesel operation.

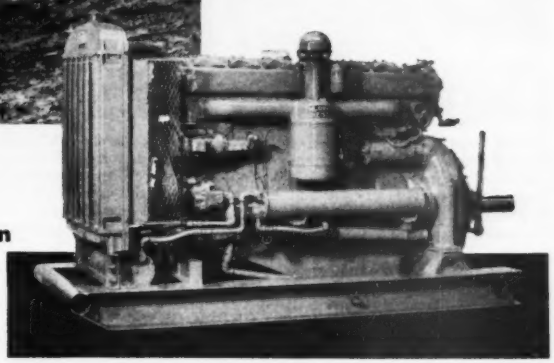
To the Murphy owner it means more power from each drop of fuel and less wear and tear on the engine . . . lower costs in all ways.

More details on "true" diesel operation as well as other Murphy features are given in the booklet "10 Questions to Ask a Diesel Engine Salesman." Ask your Murphy Diesel Dealer for a copy or write direct.

MURPHY DIESEL COMPANY
5311 W. Burnham St., Milwaukee 14, Wisconsin

Sales, Parts, Service in All Areas

Illustrated is a 30" x 42" Pioneer jaw crusher owned by H. E. Sargent, Stillwater, Maine, and powered by a 6 cylinder Murphy Diesel. The rugged construction, fast response and operating economy of Murphy Diesels make them ideal for this type of service.



***Heavy Duty Power* for construction**

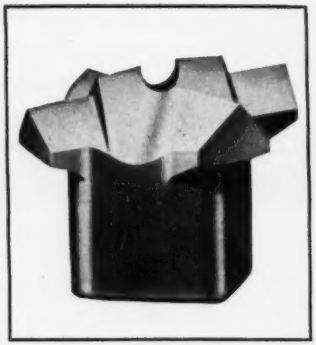
Murphy Diesel Engines and Power Units for construction, 90 to 226 H.P., 1200 and 1400 RPM. Generator Sets, 60 to 140 K.W.

209

Only the Timken Company offers all 3 types of rock bits...

1. MULTI-USE. Does best over-all job for many drilling conditions. Gives lowest cost per foot of hole when full increment of drill steel can be drilled and when control and reconditioning of bits are correct.

2. CARBIDE INSERT. For extremely hard and abrasive ground, small holes and extra deep holes. Lets drillers spend more time drilling—less time changing bits. Holes go down faster. Bit reconditioning is simplified.



3. ONE-USE "SPIRALOCK". Lowest unit cost of the three. For use where bit reconditioning is impractical or undesirable. New "Spiralock" union holds bit on dependably and permits easy removal. Simplifies preparation of steels.

and a complete engineering service!

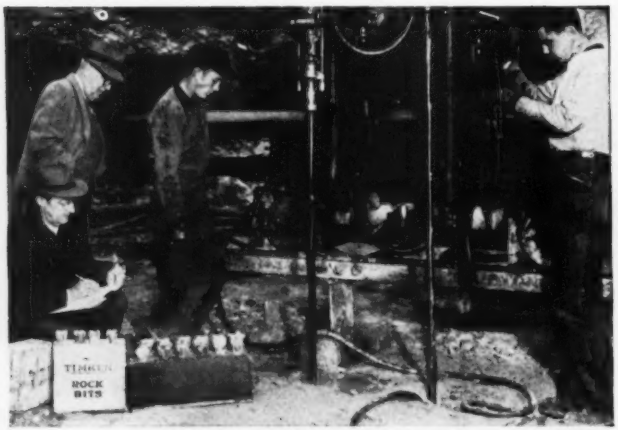


PHOTO SHOWS Timken® rock bit engineer making on-the-job study. You're sure of getting an *unbiased,* authoritative recommendation on the best rock bit for your job from the Timken Company. We're the only manufacturer who makes all three types of rock bits. And we give you the services of the world's largest rock bit field organization—with over 17 years' experience.

FREE BOOKLET. Shows full line of bits with detailed descriptions, recommended uses. Write on your company letterhead to The Timken Roller Bearing Company, Rock Bit Division, Canton 6, O. Cable address: "TIMROSCO".

your best bet for the best bit
. . . for every job

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.

CONNORS Improved Reinforcing BAR Meets ASTM A-305 Specifications

Designed for Greater Bond

Engineers long have desired a concrete reinforcing bar with a bond approaching the maximum. The new ASTM A-305 Bar is a forward step in that direction.

CONNORS STEEL COMPANY soon will have in full production its new bar which will meet ASTM A-305 Specifications.

TABLE OF ASTM A-305 SPECIFICATIONS

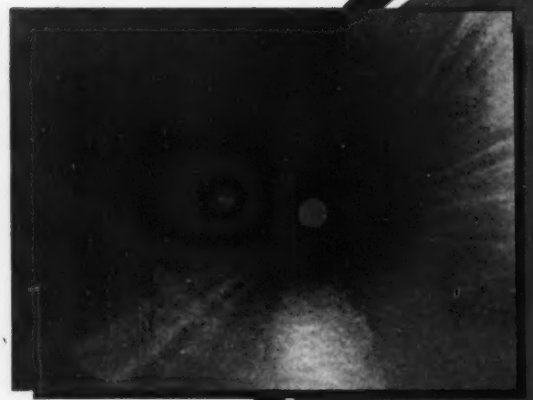
BAR NUMBER	WEIGHT	DIAMETER	AREA	PERIMETER
❷	.167	.250	.05	.785
❸	.376	.375	.11	1.178
❹	.668	.500	.20	1.571
❺	1.043	.625	.31	1.963
❻	1.502	.750	.44	2.356
❼	2.044	.875	.60	2.749
❽	2.670	1.000	.79	3.142
❾	3.400	1.128	1.00	3.544
❿	4.303	1.270	1.27	3.990
⓫	5.313	1.410	1.56	4.430

ORDER BY NUMBER

CONNORS STEEL COMPANY
DIVISION OF H. K. PORTER COMPANY, INC.
BIRMINGHAM, ALABAMA

OTHER CONNORS PRODUCTS

★ Merchant Bars ★ Tobacco Hogshead Hoop ★ Bulk Binder Strapping
★ Fence Posts ★ Highway Sign Posts ★ Cotton Bale Ties
★ Hot Rolled Strip



Old pipe reconditioned by cement mortar lining.

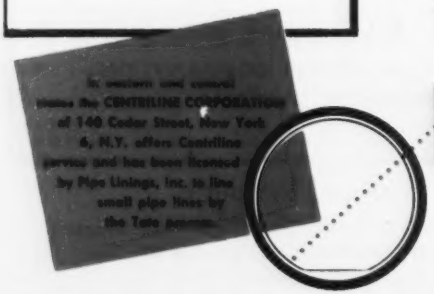
MAKE YOUR OLD PIPE LINE PERFORM LIKE NEW...

at much less than new pipe line costs!

FOR WATER, GAS AND OIL PIPE LINES OF 4" DIA. AND UP

Before reconditioning. After reconditioning.

- **Restore flow coefficients.**
- **Reduce pumping costs.**
- **Prevent leakage.**
- **Protect against corrosion.**
- **Protect against discoloration and contamination.**


CENTRILINE CORPORATION
of 140 Cedar Street, New York
6, N.Y. offers Centriline
Pipe Linings, Inc. to line
small pipe lines by
the Tate process.

Patented Cement Mortar Lining Processes Recondition Lines in Place

Are you encountering leaks, reduced flow capacity or other pipe line troubles due to failure in service of an old pipe line?

If so, reconditioning by the famous TATE and CENTRILINE processes can solve your problems quickly, efficiently and economically.

These processes use patented equipment that thoroughly removes all tuberculation and incrustation and applies a smooth, continuous cement mortar lining of proper thickness. All the work is done with the pipe line in place and with only momentary interruption of service to install by-pass lines.

The thoroughly reconditioned pipe gives practically new and permanent pipe line performance at much less than new pipe line costs. Write for complete details today.

PIPE LININGS, Inc.

4675 Firestone Blvd., South Gate, California

A subsidiary of

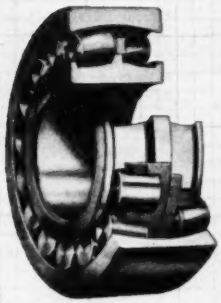
AMERICAN PIPE AND CONSTRUCTION CO.

P. O. Box 3428, Terminal Annex, Los Angeles 54, California

"Caterpillar" Diesel Tractors develop

more workpower from horsepower

. . . through Torrington Bearings



In the constant mesh transmissions of "Caterpillar" D6, D7 and D8 Tractors, Torrington Spherical Roller Bearings are used to provide larger load capacity and smoother flow of power from the engine to the tracks.

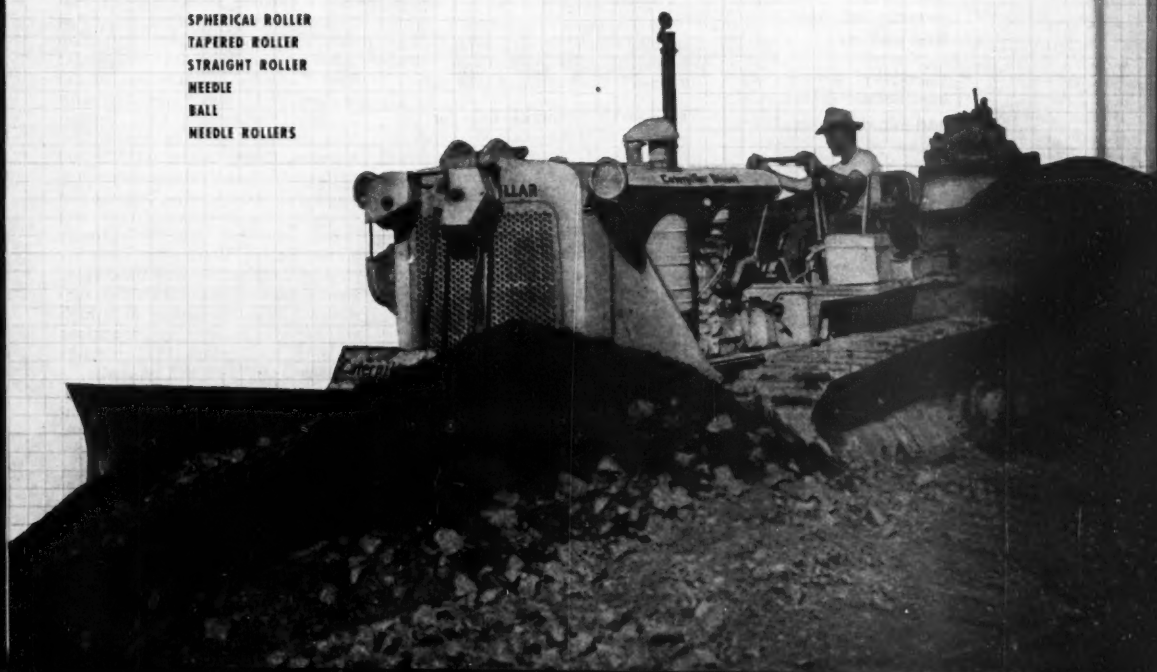
On the upper transmission shafts of the D6, D7 and D8, and on the pinion shaft of the D8, these self-aligning bearings automatically compensate for possible shaft deflections—binding stresses cannot develop.

Torrington Spherical Roller Bearings are helping all kinds of heavy-duty equipment do a better job, with a minimum of "time-out" for maintenance. Why not let our engineers show you how these high-capacity bearings can improve the efficiency of your machinery?

THE TORRINGTON COMPANY
South Bend 21, Ind. • Torrington, Conn.
District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON SPHERICAL ROLLER BEARINGS

SPHERICAL ROLLER
TAPERED ROLLER
STRAIGHT ROLLER
NEEDLE
BALL
NEEDLE ROLLERS



NEWS BRIEFS

• **Hot water**—San Bernardino, Calif., water department engineers have capped a new artesian well flowing at more than 4 mgd because of the high temperature of the water—85°. Although the well gives indications of being one of the best producers ever drilled by the city, the cooling problem has prevented its immediate use. The well is producing from two levels —250-400 ft and 700 ft—with the upper level supplying water at 66° and the lower pool at 85°. Bard Livingstone, superintendent of the city water department, says they are considering pumping water from each underground pool into a common reservoir so that it will arrive at a suitable mean temperature.

• **Gold-filled piers**—Gravel for construction of piers for a railroad bridge on the Cottonwood River in British Columbia is being dug from pits along the river bank and it shows traces of gold. One shovelful yielded about half a cent's worth. Multiply that by several million and the Pacific Great Eastern Railway may have an extra dividend.

• **Big treatment plant**—Work is under way on a new 15,000,000-gpd sewage treatment plant for Jefferson County, Ala., according to The Rust Engineering Co. of Birmingham and Pittsburgh, the constructor. Cost of the project is estimated at $879,000. Known as the Valley Creek sewage treatment plant, it is the first unit of proposed additional treatment facilities authorized by Jefferson County voters in a 1949 referendum. The work will be completed next year.

• **Roosevelt memorial**—Bids for construction of a Roosevelt Memorial on the shore of Franklin D. Roosevelt Lake near the east abutment of Grand Coulee Dam will be opened soon by the Bureau of Reclamation at Coulee Dam, Wash. The memorial will include a reflecting pool in which will be mounted a large bust of the late president. It is now being cast in nickel-bronze by the Mazzolini Art Foundry of Yellow Springs, Ohio. The reservoir behind the dam was named after the late president, who ordered work on the dam structure.

• **Housing for Alcan project**—Progress is being made in development of the plant of the Alcan Company in Northern British Columbia. Contracts for more than $1,000,000 worth of prefabricated housing and other structures for the project are in the hands of Vancouver businessmen. The first of 10 dormitory buildings, valued at $200,000, has already been shipped to Kitimat, where a group of eight Vancouver contractors have jointly developed a townsite and shipping site for the company. Shipments have been started on the biggest single order yet placed in the Alcan project—$600,000 worth of steel prefabricated Quonset huts. Awarding of the contracts for these buildings to Keystone Industries Ltd. of Vancouver was announced recently.

• **Medical center commission**—A medical center which eventually may cost half a billion dollars is to be built on Chicago's West Side. A commission has been set up to supervise its construction. Governor Adlai Stevenson of Illinois has just appointed three members of that commission—Andrew C. Ivy, vice-president of the University of Illinois, in charge of the professional schools; Homer Livingstone, president of the First National Bank; and Richard Finnegan, newspaper man. Dr. Karl A. Meyer, medical director of the Cook County institutions, was re-appointed to the commission.

• **Limestone, Me., A.F.B. construction**—New England's newest and largest airbase at Limestone, Me., under construction for B-36 bomber service, will have had a total outlay of $73,000,000 on it by Dec. 31, according to Col. H. J. Woodbury, the U. S. Army's New England divisional engineer in charge of this project and other government work on those states. Colonel Woodbury says that at least $3,000,000 will be expended at Limestone in 1952 and that additional appropriations are being sought from Congress. Construction began in April, 1947, under a contract with T. W. Cunningham, Inc., Bangor, Me., and the Lane Construction Co., Meriden, Conn. About $17,000,000 was expended on the original project, which included a runway, barracks and an operations building. Work was slowed somewhat until the outbreak of the Korean War, when rapid revival of activities became imperative. Now completed are a 10,000-ft runway, a $3,000,000 hangar 90 ft high x 320 ft wide for bombers, operations building, and before 1952 barracks for over 3,000 men will be ready.

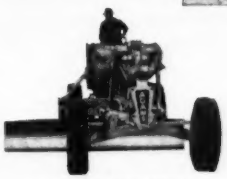
• **New runway at Vancouver**—Contract for construction of a new 8,600-ft main runway at Vancouver B. C., International Airport has been awarded to Campbell Bennett Ltd. at a price of about $1,750,000. The new concrete runway is expected to

(Continued on page 14)

Adams Motor Graders

All these blade positions —and more too—without mechanical adjustments

Ditch Cutting



Reach Outside Wheels

Reverse Ditching or Blading

● On most construction work—ditching, low and high bank slopes, wide shoulder reach, etc.—the operator of an Adams Motor Grader quickly and easily obtains all necessary blade positions through convenient cab controls—*without mechanical adjustments.* Only occasional work, calling for extreme reach, requires operator to shift blade on circle or change lift linkage.

The ability of Adams Motor Graders to provide this wide range of blade positions—*without mechanical adjustments*—is one of the big reasons why they are the fastest, most efficient and economical graders on the market. Ask your local Adams dealer for complete information.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, INDIANA

Only Adams has this exclusive combination of advantages

- **8 Overlapping Forward Speeds**... Flexible working range speeds work—increases output—provides high transport speeds.
- **Wide Range of Blade Positions**—Without Mechanical Adjustments . . . Saves Time in Adapting Machine to Needed Cuts.
- **Positive-Action Mechanical Controls** . . . Dependable, accurate adjustments—because they're geared . . . Easy, natural steering.
- **Ample Operating Clearances**... Quick, easy adaptation to work . . . Operator comfort, convenience, efficiency.
- **Fast, Easy, Servicing Plus World-Wide Dealer Service** . . . Saves time and money.

Make your next motor grader an **ADAMS**

Exhaustive ENGINE TESTS Prove

ALL 5 CLRC TESTS, standardized by the Co-ordinating Lubricants Research Committee, prove Shell Rotella Oil superior to the average of leading diesel lubricants . . . from every critical standpoint: parts-wear, corrosion resistance, ring-sticking and piston fouling.

Moreover, further tests, such as the Modified Lauson Lacquer Rating Test and Shell's own extremely severe Four Ball Test . . . all add proof upon proof that Shell Rotella Oil *does* keep engines clean longer . . . *does* extend time between overhauls . . . *does* reduce parts wear.

FLEET SERVICE confirms engine test results!

Read these authorized reports:

Yellow Cab Company, Nashville, Tenn., has 75 cabs, running 24 hours daily. They write: "We have always had trouble with sludge forming in the crankcase of our motors due to the constant start and stop driving . . . On some cabs this sludge completely blocked the passage of oil through the pump screen . . . bearings were burned out.

"After months of operation on Shell Rotella Oil we are glad to report that the *motors (thus far) examined have been found entirely clean, the pump screen as bright as brand new, and we have had no bearing trouble of any nature.*"

Creston Transfer Company, Grand Rapids, Michigan, haul uncrated furniture to the East Coast and southern cities. Creston began using Shell Rotella Oil nearly 4 years ago to correct a serious overhaul problem due to short valve life in their trailer truck engines. Shell Rotella Oil has increased valve life from 8,000 miles to better than 40,000 miles and greatly reduced all-around maintenance costs. Creston Transfer is now expanding with hauls to nearly every state. The proved lower maintenance through using Shell Rotella Oil is a basic part of Creston's expansion planning.

SHELL ROTELLA OIL . . . EXTENDS

You can EXTEND TIME between overhauls...

SHELL ROTELLA OIL slashes maintenance costs—Maintains engine efficiency

1. Positive ANTI-ACID ACTION

Shell Rotella Oil drastically reduces wear in the vital top-cylinder zone by counteracting the acid action of unburned fuel particles. This protection is extremely important in engines with intermittent loading.

2. Constant DISPERSANT ACTION

The excellent dispersant properties of Shell Rotella Oil permit it to dissolve contaminants and hold them in suspension until draining time. This prevents premature fouling.

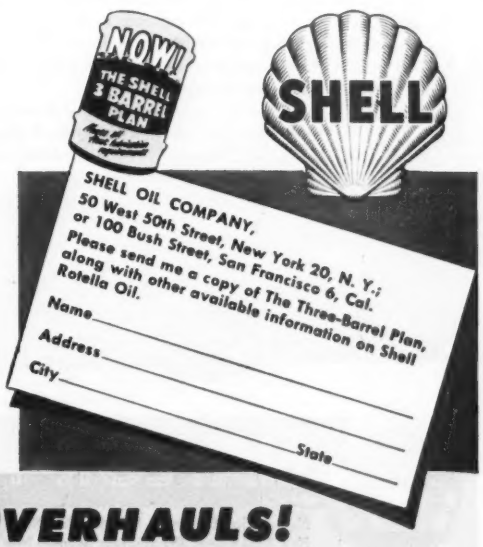
3. Maintained Engine Efficiency

Is the direct result of reduced top-cylinder and ring-face wear. Moreover, new or reconditioned engines operating with Shell Rotella Oil show a welcome extension of the "low oil consumption" period because of this same reduced wear. The above gains, combined with freedom from fouling and a significant increase in valve life, enable you to extend time between engine overhauls.

FLEET OPERATORS!

Shell Rotella Oil is "Barrel One" in Shell's famous Three-Barrel Plan for fleet lubrication

If you want to cut lubricant inventories to the bone . . . to realize savings in time, labor and materials . . . mail this coupon for "The Three-Barrel Plan." It's a practical booklet that shows how this revolutionary lubrication program can cut your maintenance costs.


NOW!
THE SHELL 3 BARREL PLAN
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SHELL OIL COMPANY,
50 West 50th Street, New York 20, N. Y.;
or 100 Bush Street, San Francisco 6, Cal.
Please send me a copy of The Three-Barrel Plan, along with other available information on Shell Rotella Oil.
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City
State

TIME BETWEEN OVERHAULS!

STOP-WATCH CONNECTIONS...

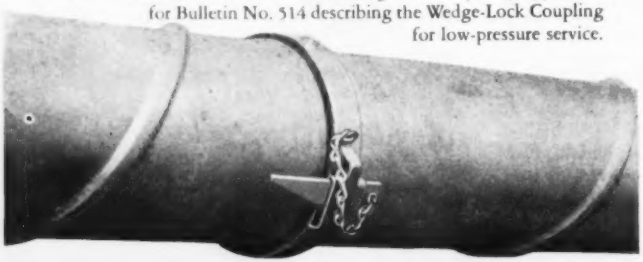
NAYLOR Wedge-Lock COUPLINGS Provide Fastest Way to Join NAYLOR Light-weight PIPE

It's a simple matter to assemble lines of Naylor Pipe when you use Naylor Wedge-Lock Couplings.

Whether the line is for high or low-pressure service, there's a Wedge-Lock Coupling to do the job,—quicker and easier than ever before possible.

You simply slip the coupling over the pipe end, put the next section of pipe in place, drive out the opening wedge so that the coupling snaps into place on the grooved ends of the pipe, and then drive the wedge through the lugs on the coupling to seal the connection. A hammer is the only tool required to assemble or disassemble these one-piece, positive type couplings.

Write for Bulletin No. 513 describing the heavy-duty type, and for Bulletin No. 514 describing the Wedge-Lock Coupling for low-pressure service.



NAYLOR PIPE

Naylor Pipe Company, 1248 E. 92nd St., Chicago 19, Ill.
New York Office, 350 Madison Avenue, New York 17, N.Y.

News briefs . . .

be completed before winter. It will handle any aircraft up to the Boeing Stratocruiser, and will replace the present runway which has been broken up by heavy use.

• **Demolition par excellence**—In the last 15 years more than 7,800 buildings have been torn down in Pittsburgh, the city bureau of building inspection reports. Many were eliminated because of large-sized housing projects. Others were torn down to make way for industrial expansion and the new Gateway Center and Point Park projects, playground and park extensions, and street widening. The peak year was 1939, when 1,208 buildings were torn down, 670 of them to make way for the first three public housing projects, Bedford Dwellings and Terrace Village Nos. 1 and 2. The Jones & Laughlin Steel Corp. expansion and the beginning of the Urban Redevelopment program last year resulted in the razing of 777 buildings.

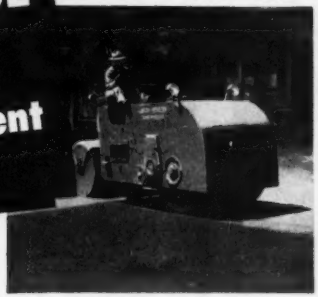
• **Licensed engineer wanted**—Monroe County Chapter, New York State Society of Professional Engineers, has demanded that Rochester's new public works commissioner be a licensed engineer. The chapter called upon the city manager and city council to require appointment of a licensed engineer to the post which has been held at various times in recent years by non-engineers. The present city charter does not require that the commissioner be a licensed engineer.

• **May check 75-year fire**—The federal government is considering the advisability of extinguishing an underground fire which has burned for 75 years in the North Dakota badlands. The fire is slowly consuming a vein of lignite near Amidon and has burned its way three miles underground. Federal Mining Engineer Willard Cole says the burning lignite could be dug out or holes could be sunk around the fires which would then be smothered with steam or chemicals, but Paul Ziner, regional Bureau of Mines director at Minneapolis, says that such fires appear relatively unimportant when compared with the 3 billion-ton lignite reserves in North Dakota.

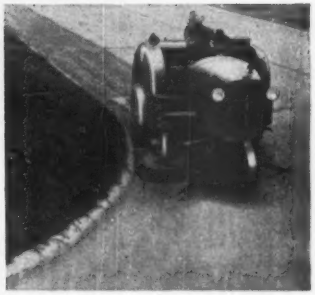
• **New market for Boston**—Since the market district surrounding the famous old Revolutionary Faneuil Hall is to be largely demolished to provide right-of-way for an arterial highway system, a new central wholesale market to cost about $18,500,000 will be built in South Boston.

EXCEPTIONAL PERFORMANCE on mobile equipment

Austin-Western "99-H" Power Grader



Austin-Western Tandem Roller

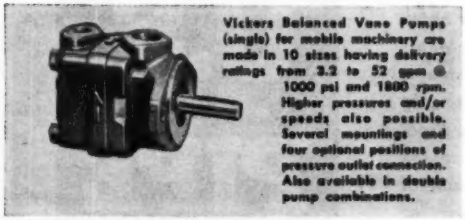


Austin-Western Model "40" Motor Sweeper

...that's why

Austin-Western *uses* VICKERS VANE TYPE PUMPS

Here are some of the reasons for the outstanding performance of the Vickers mobile equipment pump shown below . . . reasons that influenced its selection as the source of hydraulic power for Austin-Western road machinery.



Vickers Balanced Vane Pumps (single) for mobile machinery are made in 10 sizes having delivery ratings from 3.2 to 52 gpm @ 1000 psi and 1800 rpm. Higher pressures and/or speeds also possible. Several mountings and four optional positions of pressure outlet connection. Also available in double pump combinations.

1. Compact, high-efficiency design with many choices of pump size and mounting arrangement SAVES SPACE and also provides INSTALLATION SIMPLICITY.
2. Pump does not load up until engine is up to speed, for EASY COLD WEATHER STARTING.
3. All running clearances automatically maintained as pump wears; PERFORMANCE DOES NOT DROP OFF WITH WEAR.
4. Exclusive hydraulically balanced design neutralizes oil pressure loads on bearings, providing LONG LIFE WITH NO ADJUSTMENTS.
5. Rugged construction makes Vickers mobile equipment pumps TOUGH.

For further information get in touch with the nearest Application Engineering office or write to Detroit for Catalog M-5100.

VICKERS Incorporated *DIVISION OF THE SPERRY CORPORATION*

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ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Ask for NEW CATALOG M-5100

4545

Mobile's City Hall, a fine example of French colonial architecture, as it looked 100 years ago

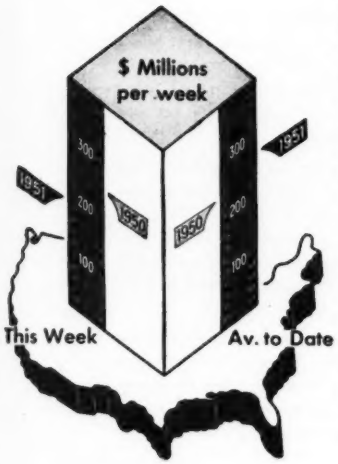
The City of Mobile in Alabama has been under four flags since it was founded in 1702 as the capitol of the French province of Louisiana. As one of our older cities, Mobile quite naturally has cast iron water and gas mains in service that were laid well over a century ago. Thanks to the shock-strength, crushing-strength and beam-strength of cast iron pipe, these old mains continue to cope with stresses undreamed-of when they were installed. And because of these strength-factors of long life cast iron water and gas mains, laid over a century ago, are still serving in the streets of more than 30 American cities.

United States Pipe and Foundry Company, General Offices, Burlington, N. J. Plants and Sales Offices Throughout the U. S. A.

U.S.
cast iron
PIPE
FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

NUMBER ELEVEN OF A SERIES

THE CONSTRUCTION WEEK



Contracts by type of work

	This Week	Cumulative 43 wks 1951	1950	% chge
Waterworks.	$3.9	$173.8	$191.3	−9
Sewerage ..	1.6	269.6	229.3	+16
Bridges	2.9	275.1	318.4	−14
Highways ..	12.8	1,001.4	1,065.1	−6
Earthwork, Waterways.	3.2	436.4	337.3	+29
Buildings:				
Public	50.0	1,853.2	1,388.9	+33
Housg., pub.	2.3	576.8	257.7	+124
Housg., priv.	54.6	1,626.2	2,786.6	−42
Commercial	7.0	532.0	823.8	−35
Industrial .	40.1	3,558.8	1,366.7	+160
Unclassified .	10.7	1,448.1	1,150.0	+26
Total	**$189.1**	**$11,751.4**	**$9,914.9**	**+19**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr. Cost..	Oct.'51	546.48	262.69	114.56
Bldg. Cost..	Oct.'51	403.40	218.06	114.67
Volume	Sept.'51	447	182	129

ATOMIC BOOM—If there's going to be any bigger boom in Atomic Energy Commission construction (as ENR has foreseen) Congress wants to know about it in detail. On their way home to answer constituents' questions, Congressmen called for facts and figures on a maximum expansion of atomic energy for U. S. defense. The Atomic Energy Commission and the Department of Defense must submit by Jan. 3 a detailed report on the amount of money required for the program; specific extent of new facilities; priorities of materials and manpower involved; the probable impact on the national economy; and the joint views of the two agencies as to the precise program to be carried out.

SCHOOLS PLEAD FOR STEEL—Educators bitterly protest the National Production Authority's policy of refusing steel priorities to urgently needed school construction. Witnesses before a House Education subcommittee have pointed out the latest allotment is only 38% of the estimated need for 1952. The United States Office of Education can only hope to complete projects already underway. With an estimated influx of 1.7 million additional school children next September even 100% fulfillment of requested allotments would not be enough, it points out. Only bright spot in the situation is approval last week by the Senate Labor and Public Works Committee of legislation to authorize Federal aid for the maintenance and construction of schools which are needed in critical defense areas.

ARTERY GOES ON—An agreement has been reached in the Massachusetts Supreme Court that will permit resumption of work on that section of Boston's $40-million 10-lane expressway central artery where it passes over the Boston & Maine Railroad tracks at North Station. Work had been halted for three weeks under a temporary restraining order obtained by the railroad against the State Department of Public Works. Suit against the state to determine the railroad's rights will continue as the work is being carried on.

SEAWAYS SKIRMISH LOOMS—When Congress convenes again next January, it undoubtedly will give more consideration to the St. Lawrence Seaway. Meanwhile opponents and proponents of the project are preparing to wage a publicity battle. Both the Detroit common council and the Michigan legislature are considering a proposal by Rep. John D. Dingell, Michigan, to appropriate $500,000 for pushing the waterway development. "You've got to fight fire with fire," he says. "The other side (railroads and utilities) now is spending $1000 to $1 on our part."

NEW YORK DEBACLE—Employer and union spokesmen say 15,000 building trades mechanics in the metropolitan area of New York are unemployed. They blame National Production Authority curtailments on construction materials which have throttled many large scale projects. Although many tradesmen are leaving New York for other sections, unemployment is still mounting fast because of the rapid contraction of work, according to comments made by leaders of the Building and Construction Trades Council, AFL.

"Those blanks aren't scrap... they're saleable steel", agreed Norm

Waste is something Norm can't stand. The same goes for Tom Brinker, manufacturer of portable welding units and a long-time Inland customer. "Every time you form a lamination for your welder," Norm observed, "you leave a 4 x 7 inch piece of 22 gauge electrical sheet steel that you can't use. Why not let us find you a customer for those blanks?"

Norman Grant is an Inland Steel sales representative. His experience told him that those 4″ x 7″ blanks had more than scrap value. Especially at a time when steel is in such great demand. With his trade contacts, Norm was sure he could find a buyer.

A few days later, on his way to visit another Inland customer, Norm had almost driven past the plant of an outboard motor manufacturer when he got a flash . . . "motors!" He stopped. Sure enough, that manufacturer had a pressing need for steel for his magnetos . . . and 4″ x 7″ was a perfect size.

Result: An Inland customer's profit was augmented by the sale of otherwise waste blanks and a motor manufacturer got steel he sorely needed. INLAND STEEL COMPANY, 38 South Dearborn Street, Chicago 3, Illinois.

Your scrap is needed by the steel industry for national defense.

Names used are fictitious.

Making your steel is only part of our job.

DEFENSE BRINGS SHIFTS IN INDUSTRIAL BUILDING

Mobilization is bringing a change in the regional distribution of industrial building contracts. The basic pattern is still the same—a gradual swing of industry toward the South and West. But the older industrial states in the Middle Atlantic and Middle Western areas are getting a bigger share of industrial building than they got in earlier post-war years.

This trend is important—it indicates possible trends in other types of building after the defense emergency is over.

Expanding industry raises regional incomes, and thus can help increase demand for new housing and commercial buildings. New industry often creates needs for houses, commercial buildings and all kinds of community facilities located near the plant. That's particularly true in the South and West, where workers may move from farms into the towns and cities when they take new industrial jobs.

The figures below show how regional shares of U. S. industrial building have shifted since Korea was attacked in June, 1950. The figures show each region's share of the U. S. total.

INDUSTRIAL BUILDING—ENR*

Region	1935-39	1946-49	Since Korea
New England	5.5%	4.2%	2.0%
Middle Atlantic	32.9	17.5	17.3
Southern	13.6	13.8	21.7
Middle West	26.6	19.5	28.3
West of the Mississippi	12.0	25.6	23.5
Far West	9.4	17.4	7.4

* Shares of the U. S. total

• **Where the Trend Continues**—Since Korea, the eleven Southern states have been getting a much bigger share of industrial building contracts—21.7 pr cent compared to 13.8 per cent in 1946-49.

The share going to the fourteen states in the West of the Mississippi region has fallen from its 1946-49 level of 25.6 per cent. But the region still does nearly one-quarter of U. S. industrial building, compared to only one-eighth before World War II.

New England is still losing. It got 5.5 per cent of industrial building contracts before the war, 4.2 per cent in 1946-49, and only 2 per cent since Korea.

• **Reversing the Trend**—The Middle Atlantic region is holding its own, getting the same share of industrial building it got after the war. Government tax benefits for expanding defense industries are important here—Pennsylvania alone gets more certificates for accelerated amortization than New England and the Far West put together.

The Middle West has gained terrifically, now gets a bigger share of U. S. industrial building than it did even before World War II. Here, again, Government helps—with more than $1.5 billion in accelerated amortization.

The seven Far Western states—which gained industry after the war—have taken a huge cut in their share of industrial construction. This shift started even before Korea was attacked, and has continued through the mobilization period.

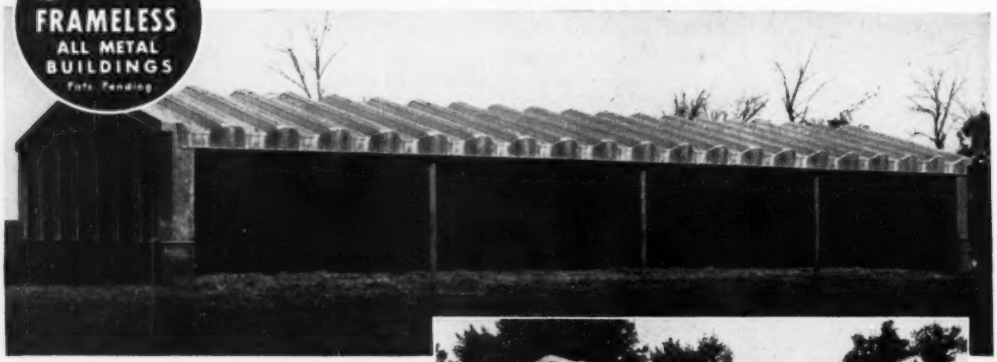
• **The Outlook**—The trend of industrial growth toward the South and West will probably go on after the present emergency is over. The basic forces that cause it—shifts in population and incomes, the development of new markets and sources of raw materials—still exist.

But the defense program, by interrupting the trend, has given a substantial boost to development in the Middle West and Middle Atlantic regions. The present industrial expansion in those areas may add new strength to demand for other types of construction there after the mobilization emergency is ended.

Also for the FARM...

FRAMELESS *Monocoque* Construction

Behlen FRAMELESS ALL METAL BUILDINGS Pats. Pending



HERE Are Buildings You See In Ever-Increasing Numbers Nowadays Throughout Agricultural America . . .

Behlen ALL-METAL
FRAMELESS
BUILDINGS

Corrugated Metal Arch Monocoque Construction and Roof Beam Action

(Patents Pending)

New principles of self support in building construction make possible this rigid-frame type of building without use of framework, vertical support columns or truss members.

Behlen Buildings are built of panels of deeply corrugated sheet steel (or aluminum). Extended by means of bolted connections, from footing up and over the roof ridge to footing on the opposite side, each continuous panel becomes in itself a support arch with the strength of an I-beam of equivalent weight. Roof Beam Action, which accompanies this construction, further increases strength and rigidity. The metal panels not only form the weather-proof shell of the building but also serve as the structural frame.

For full particulars about Behlen Buildings, whether for the farm or the industrial user, write or wire.

Custom-Made for ANY Farm Requirement

Andrew Bros. farm 320 acres of rich South Dakota land, near the town of Colton. They are well known also as "feeders," as they fatten cattle for the market, feeding as a rule 100 or more head at a time.

Pictured above are views of a Behlen All-Metal Frameless Building, *erected to their own specified size requirement*, as a shelter for their cattle.

"We like this building because it's fire-proof, wind-proof, leak-proof, and so strongly built," said Mr. Raymond Andrew. "Out here there are some pretty high winds, and heavy snows. We need buildings like this — buildings that can *really* take it."

Protection against the weather, however, is only one of the reasons why Andrew Bros. chose a Behlen Building. Although 25′ 4″ x 69′ 9″ x 6′ in size, their Behlen Building has no framework, no support columns in the interior, no trusses—nothing to waste space or injure crowding, jostling cattle. It was easy to erect and can be extended to any length.

"We consider it not only the best kind of building for a cattle shelter," continued Mr. Andrew, "but also it makes an ideal implement shed when we're not feeding; it's so roomy and convenient. We may enclose and insulate an end section for a garage or repair shop."

Behlen MANUFACTURING CO.
METAL BUILDINGS DIVISION
COLUMBUS, NEBRASKA

Construction price control

THE BIG QUESTION on the price control regulation that the Office of Price Stabilization is planning to impose on the construction industry (ENR Oct. 18, p. 23) is, "Will it work?" Unless it does, all that is accomplished is to confuse a business whose efficient functioning is vital to our preparations for defense—and with an assist rather than a deterrent to inflation.

The question of workability is raised because the OPS, while recognizing that construction would not fit under any of its other price regulations, has fashioned the construction regulation to the same pattern as the others. This pattern is to attempt to control or stabilize prices by imposing ceilings on the profit and overhead items.

While these two items appear on contractors' cost estimates, they seldom measure what they describe. Almost every item in a cost estimate is a guess. Only on the impossible chance that all the guesses turn out to be accurate—or that bad and poor guesses cancel each other—will the listed profit turn out to be the actual profit.

Merely requiring that the markup be limited to 10 or 15 or whatever percent can't exercise any positive control over construction profits—at least on lump sum or unit price contracts. A guess that proved to be very high on, say, concrete placing, might result in a final profit twice as high as the approved markup. Likewise a low guess on a single large item could wipe out all profit, both approved and actual. Costs of individual operations on a construction job are not closely predictable (as is, for example, the cost of machining a bearing in the manufacture of an engine). Applying a markup percentage to the sum of such "costs", therefore, only rarely reveals the actual profit.

All this suggests that the basic difficulty with the regulation lies in the pricing of individual items that make up the total upon which the permitted markups are figured. OPS attempts to take care of this by requiring that these items be determined from "comparable jobs." But whether one construction job is comparable to another one is seldom known until both are history. The fact that two jobs may have pile foundations does not make them comparable; unforeseen conditions might double the pile cost on one job over another. The fact that two buildings have steel frames does not necessarily make them comparable; if the heights between floors are different the cost of erection and of installing walls and partitions may well be different.

Moreover, which one of a number of seemingly comparable jobs does one choose as his base? The regulation says it is permissible to use any job which "you performed or on which you made a bid." Some bids have been made very high with the intent of passing up the job except at an unusually large profit. These bids apparently can be used as a base. Obviously a contractor will choose to use the highest priced "comparable" job during the base period that seems to promise that he will be the successful low bidder.

Actually the question, "Will it work?" does not apply so much to the contractor as it does to the hoped-for effect on the economy. Most contractors will probably be able to observe the letter of the regulation in one way or another, although with considerable attendant trouble and expense. But will it control inflation and give the buyer of construction his lowest possible price? The possibilities cited above raise some doubts.

When all is said and done the best assurance of low prices and your money's worth in construction is inherent in the practice of competitive bidding so widely used in the construction business. One has the vague feeling that OPS recognized this fact, but felt that under the law it had a duty to do and did it, hoping for the best.

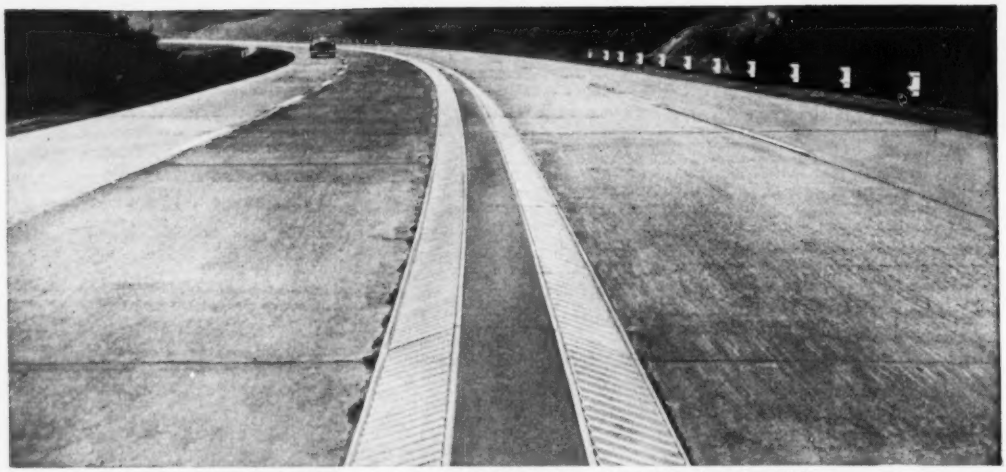
Make steel requests realistic

CONSTRUCTION ORGANIZATIONS and their claimant agencies for materials under the Controlled Materials Plan have come in for some justifiable criticism from the steel industry for unrealistic requests for structural shapes in the fourth quarter. These requests or "stated requirements" for the construction industry totaled 1,400,000 tons—more than twice the all-time quarterly record of available supply.

It will be recalled that the stated requirements for structural steel for the iron and steel expansion program had to be cut 49%, and community construction 89%. There is more than a suspicion that these and other programs far overstated their actual fourth-quarter needs. On an annual basis, it is said that, in total, three times as much tonnage of structural shapes was asked for as was shipped in the all-out war year of 1942. Not only is such a scale of demand impossible to meet, but in the consequent paring of requests, jobs actually needing steel may be inadvertently slowed or stopped.

Over-statements of needs for structural shapes greatly complicate defense planning. On the other hand, if only that amount of steel is requested which can be used very soon after receipt, it is quite probable that the CMP controls will be able to keep the flow of steel very closely on schedule.

Engineers and contractors can help the situation, and themselves, by more carefully timing their orders with the actual progress of their jobs. And those who are carelessly fixing quantities of steel on the high side of actual needs would do well to get back on a realistic basis. Eagerness to get steel is understandable, but only if everyone plays fair can steel be supplied where and when it is needed.



Atlas White Reflecting Curb on Route 51 near Elizabeth, Pa. Designed by Pennsylvania State Highway Dept.; contractor, Frank Donatelli & Co., Pittsburgh; curb installed by Poiselli & Angelucci, Philadelphia.

Which curb would you specify

FOR A SAFER HIGHWAY?

PENNSYLVANIA's well-engineered Route 51 (above) *could* have looked like the picture below it. Instead, white concrete reflecting curbs, made with Atlas White Cement, brightly emphasize the median divisor for safer separation of high-speed traffic.

These white-ribbed curbs are even more efficient at night and in the rain. Their corrugated faces reflect headlight rays back to the driver . . . gleam brighter when wet.

Obviously, the inherently greater day-and-night visibility of such curbs makes highways safer. And for this reason, you'll find Atlas White Reflecting Curbs used on many of our nation's finest traffic arteries.

Placement of the curb is simple and fast. One method is to place Atlas White Duraplastic* mortar mix on a grey concrete base, screed to 1-inch thickness, and score with a hand tool. Contractors prefer Duraplastic because its air-entrainment feature makes the mix more workable, more plastic; makes placement and scoring easy.

For further information write: Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N.Y.

**"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.*

ATLAS® **WHITE CEMENT**

For Concrete Reflecting Curb and Markers

A UNIVERSAL ATLAS PRODUCT

ENR-RM-70

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

ENGINEERING NEWS-RECORD

OCTOBER 25, 1951 VOL. 147 NO. 17

Construction faces tough challenge

Congress assigns industry vital projects —building defense strength for the nation

WASHINGTON—Congress did more on defense policy, money and taxes than most of the country gave it credit for during the record-breaking session just ended. All three phases of its major accomplishments will vitally affect the course of construction in 1952—and probably for years thereafter.

On the money side, Congress dished up construction cash by bucketfuls. The money appropriations furnish the fuel for the defense programs that Congress had already determined to carry out. Those appropriations signal a broader construction shift from civilian to defense purposes.

Financing of defense construction is still far from complete. In 70 days Congress will be back to consider additional expansion. Authority to build more than $5 billion of new atomic plants will be acted on early in the next session of the present Congress.

Not far behind that authorization will come a new military public works program calling for at least $5 billion. The Armed Services Committees of the two houses have already told the Air Force to use its appropriated funds for planning expansion from the present 95 to some 140 wings.

That growth in wing strength will require a vast expansion of air bases and related facilities. Military public works money voted on the closing day of the last session will furnish the bare minimum of ground facilities for the presently authorized 95 air wings.

• **Gathers speed**—Atomic energy expansion will move swiftly once the authority is granted and money is supplied. The Air Force expansion will come more slowly, dependent as it is on enlarged capacity of the aircraft industry. But it, too, will gather speed swiftly—in comparison with peacetime standards. Contractors can look for a large block of atomic energy jobs in 1952—and for the first contracts under the forthcoming Air Force expansion program.

Those jobs will be in addition to the big volume that will be financed out of appropriations already made. Congress last week voted nearly $4.2 billion on new money for military public works. The largest chunk, exceeding $2 billion, went to the Air Force—half of it to be spent on overseas bases.

Peacetime programs of the federal government were not cut short on cash while Congress was passing out big gobs to the military. The House made a real effort to economize; it cut both the Reclamation and Army Civil Functions budget requests to bone.

But the Senate would not go along with such severe pruning, and the two programs ended up with all they need for active construction in the current fiscal year—$202 million of project money for Reclamation and $597 million in all for the Army's Civil Functions (See next page).

• **Problems ahead**—Materials and not money will set the pace for these government projects and for all other jobs in the country during the next year. Congress made that clear when it extended the Defense Production Act to June 30, 1952, and plainly showed its willingness to vote another extension at the next session, if needed. That action maintained complete materials control in the hands of the mobilization chiefs.

Putting control in the government was the only answer Congress could find to the problem of dividing scarce supplies without bringing on black-market bidding by competitive consumers.

The results have been rough on civilian construction, with commercial building and highways among the chief sufferers. Congress has been under strong pressure to force the mobilization agencies to allot more materials to highways, schools and others.

• **Doing job**—But so far Congress has kept its hands off the mobilization heads. The officials have been able to defend their decisions before congressional committees and most congressmen still feel that the mobilization agencies are doing the best job that can be done in parceling out scarce materials.

How long this concord will last, nobody can foretell. If Congress begins to stick its fingers more determinedly into agency operations, the Division of the Materials Supply may be seriously altered, with resulting changes in the construction picture.

• **Big cut**—Civil defense did not fare so well at the last session. Congress seemed to suffer from some of the same apathy on civil defense for which it criticizes state and local public officials. It ended up by voting $75 million for the federal share in civil defense preparations. The Administration had said it needed more than $500 million this year to help our cities and industries get ready for air attack.

Defense housing and community facilities likewise got treatment that seems less than adequate. Late in its ten-month session, Congress finally passed a bill that furnishes financial assistance for housing construction in critical defense areas. But the same bill set up only $60 million for grants and loans to local communities in these areas—to build and operate the facilities and services required to support defense growth.

The effort this time is not going to be that much smaller than in the last war, when the government invested $458 millions in facilities for about 400 new or expanded communities.

• **No guarantee**—On all curtailed money allotments, Congress maintained that it was granting enough to carry on the programs until January, when the agencies can come back for more if they need it. But that defense covers only part of the ground. The agencies cannot count on more money. Many of them have to schedule their operations on what they have.

On the labor front, Congress passed an important amendment to the Taft-Hartley Act that vitally affects construction. The amendment eliminates the requirement for union shop elections, so difficult—if not impossible—on construction projects.

Contractor now may sign a union-shop agreement even before starting a job and a union with collective bargaining rights may ask for such an agreement without requiring the workers to vote in a union-shop election.

• **Price change**—Price controls are maintained under the extension of the Defense Production Act but with a cost-plus amendment that gives manufacturers the right to get a price equal to the highest in the first half of 1950 plus all cost increases to July 26.

More electricity for defense

New $597-million Engineers budget includes three new power projects

In its $597-million appropriation bill for Army civil functions approved last week, Congress voted construction funds to start three new Corps of Engineers projects that will develop important blocks of hydroelectric power. The bill has gone to President Truman for signature.

The three projects are: The Dalles project, $4-million, on the Columbia River in Oregon and Washington; Old Hickory, $2 million, on the Cumberland River in Tennessee; and Gavins Point, $2 million, on the Missouri, in Nebraska and South Dakota. Only one new power-producing project was denied—Ice Harbor Lock and Dam on the Snake River in Washington.

• **Ample funds**—Critical reports leveled at the Army Engineers by House committees this year had no visible effect on the final appropriations. They give the Corps of Engineers $597,216,713 for the current year. That is nearly $82 million more than the House voted in June, and it is only $41 million less than the Senate passed in August. Total budget estimates requested for the year exceeded $662 million.

No lack of construction funds will hamper Army Engineer operations this year. Availability of materials—rather than money—will determine the rate of construction progress.

Planning gets adequate consideration in the appropriation bill. Congress voted only $1.5 million of new planning money, but it gave the Army Engineers authority to use unobligated planning funds from past appropriations—but only for projects certified by the President as essential to defense. This is new authority, never before granted to the Engineers. They have more than $4 million of unused planning funds that can be applied to certified projects.

• **Details use**—Out of the appropriated planning money, Congress stipulated that $750,000 must be utilized for three reservoir projects in Kansas—Tuttle Creek, Toronto and Strawn. The President in his supplemental request of Aug. 8 for additional flood control funds had asked $5 million of construction money for Tuttle Creek and $3 million for Toronto. But because the Army Engineers had not brought in the final project report for these reservoirs, the House conferees insisted that Congress wait until January before voting any construction money for them.

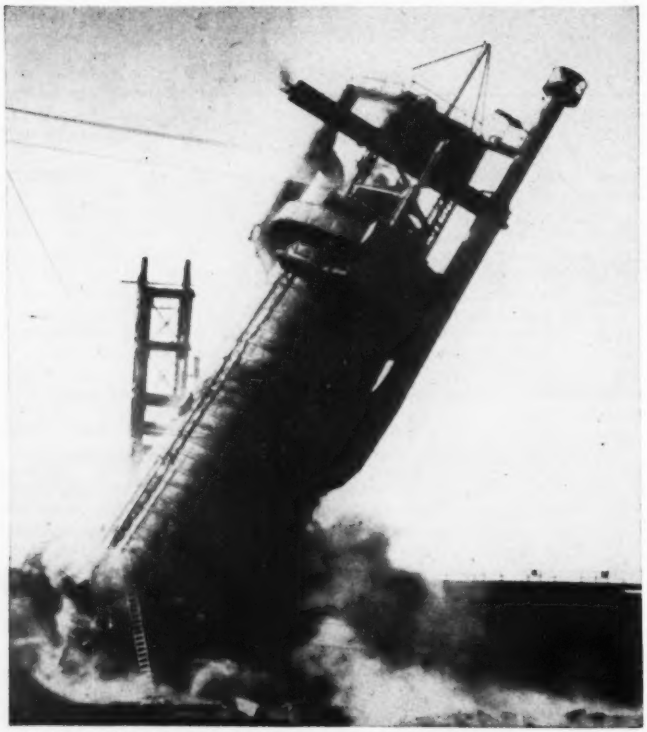
On funds for surveys and examinations that develop the groundwork for future plans, the bill is extremely tight. It appropriates and specifically earmarks just $800,000 for this purpose—$400,000 for New England and $400,000 for the White, Arkansas and Red River basins. Except in these areas, Army Engineer investigations will be drastically cut.

Where projects have been certified by the President in the past, they will presumably be eligible for planning funds out of the total of about $5 million available for this work. Niagara Power planning apparently could be continued in this way.

• **Other funds**—For construction of river and harbor projects, the bill appropriates nearly $193 million. The largest project item in this group, just under $43 million, goes to McNary Lock and Dam on the Columbia. Next in size come Chief Joseph Dam on the same river, with nearly $17 million, followed by $6,300,000 for Jim Woodruff Lock and Dam in Florida. The bill also provides $3 million to complete the lock and start the dam for power development at the Cheatham project on the Cumberland.

Flood control projects get more than $316 million in the bill. Largest allocations in this category go to two Missouri River projects: Fort Randall, $34,699,000 (of which $2 million is authorized for transfer to start Gavins Point) and Garrison, $37,083,700.

Clark Hill in Georgia gets $18 million; Lookout Point, $16 million, and Detroit, nearly $17 million, both in Oregon; Buggs Island (hereafter to be known as John H. Kerr Dam and Reservoir, the bill says) in Virginia and North Carolina, $17 million; Bull Shoals in Arkansas and Missouri, nearly $15 million; and Albeni Falls in Idaho, $10 million.



BLAST FURNACE BLASTED—Dynamite and a steel cable pulled by a locomotive sent a 500-ton blast furnace toppling last week at the Colorado Fuel and Iron Corp.'s works at Pueblo, Colo. The furnace was wrecked by Affiliated Furnace, Inc. of Pittsburgh, Pa. to make room for a new furnace. Workers of the Eichleay Corp., also of Pittsburgh, moved in immediately after the blast and began skidding the new 350-ton furnace-shell 100 ft onto the foundations of the old structure. (Wide World photo)

Brave plans afoot for public housing

Public housing plans showed a spurt last week in spite of the discouraging shortage of building materials.

A big decision by the Public Housing Authority in Washington has opened the way for the start of some 17,000 units in 15 Ohio cities.

In New York, the Board of Estimate approved a $12.5-million privately sponsored slum clearance project for Manhattan's Upper West Side. And in Detroit plans advanced for a multi-million-dollar slum clearance program in Lower East Side.

• **Ohio plug pulled**—The program for low-rent housing in Ohio has been delayed nearly three years because the PHA feared an Ohio law exempting public housing projects from real estate taxes faced court attack.

Last June the Ohio Supreme Court upheld constitutionality of the act. Federal and Ohio officials reached an agreement, which last week pulled the plug for developments in: Akron, Canton, Cleveland, Lorain, Warren, Youngstown, Mansfield, Portsmouth, Columbus, Dayton, Steubenville, Cincinnati and Hamilton.

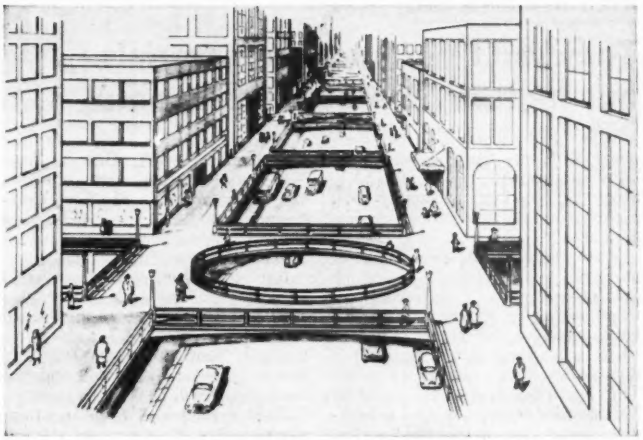
These cities can now obtain advance loans for preliminary plans, and they will be eligible to acquire existing federally owned low-income housing so that they can begin receiving payments in lieu of taxes. The ruling also makes them eligible for federal grants to undertake slum clearance programs.

• **Joint project**—Nine institutions are backing the Morningside-Manhattanville project approved for New York. They are: Barnard College, Columbia U., Corpus Christi Roman Catholic Church, International House, the Jewish Theological Seminary, the Juilliard School of Music, the Riverside Church, Teachers College, and Union Theological Seminary.

The development will include six residential buildings, each 20 stories high, to accommodate about 3,500 persons. Parking facilities, landscaped areas, playgrounds and stores on the Broadway frontage are also included.

• **Detroit plans**—Multi-million-dollar development of a Lower East Side slum clearance program, and construction of a modern residential subdivision, with shopping center, parking areas, recreational and school facilities, has the backing of Detroit's mayor and City Council.

Federal aid will be sought to help pay the cost of preparing the area for resale to private builders. Under the Federal Housing Act, the city will be reimbursed for two-thirds of the difference between its expenses and the sale price of the land.



ELEVATED WALKWAYS—Albert L. Tholin, chief planning engineer in the Chicago Bureau of Sewers, proposes construction of second-floor level walkways for buildings in the Loop (see above). He lists as advantages: they would reduce street congestion; provide a new level for store show windows; cover loading and unloading platforms; provide parking space on the ground floors of present buildings; permit the widening of streets to double their present capacity. Cost of installation on 11 miles of Chicago streets is estimated at $35 million.

Crowded schools to keep on bulging

WASHINGTON—Soon it won't be a case of youngsters playing hookey from school. The school just won't be there for him to go to, education officials told a House Education and Labor subcommittee last week.

Suffering another cutback in steel allotments, they roundly denounced the National Production Authority. The NPA Administrator, Manly Fleischmann, took the stand and returned the fire with equal vigor.

The U.S. Office of Education—claimant agency for the schools—asked NPA for 192,000 tons of steel for the third quarter this year and got 100,000 tons. In the fourth quarter, it asked for 196,000 tons and got 104,000 tons. Now, for the first quarter of 1952, it has been allotted only 96,000 tons.

• **Not enough**—"This is less than 38% of the estimated total requirements," testified Commissioner of Education Earl J. McGrath. And, while school construction is lagging, a "tidal wave of youngsters" is bearing down on the classrooms.

School enrollment he said, was 800,000 greater than last year and by September, 1952, might be 1.7 million more than now.

His position was backed by a parade of educators and by Glenn Stanton, Portland, Ore., president of the American Institute of Architects, who sees "an ominous future because of the impact of controls."

• **Rebuttal**—Fleischmann was less pessimistic. He said school construction in 1951 will set an all-time high record. Allocations of structural steel and other scarce materials will permit school construction in 1952 at a rate not far under that for 1950 and 1951.

By the end of this year, an estimated $1 604 million will have been spent on school construction, he estimated. For 1952, he sets the total at $1 150 million, a cut of 22% from what has been requested.

He predicted that, by the latter part of 1952, the structural steel shortage should be over and there will be an increased supply of aluminum, copper and other scarce materials.

Under the allocation program, Fleischmann said, the military gets what it needs when it needs it, but only after a careful screening process to see it gets nothing extra.

• **House acts**—At the conclusion of the hearings, the House went on record that more steel, copper and aluminum should be allotted for schools and hospital construction.

It requested that NPA ask the DPA to reconsider its allotment of these materials.

Another bill that would insure materials and equipment to complete construction of schools, hospitals churches programmed before Sept. 8, 1950, was introduced in the House but no action was taken on it before Congress adjourned.

After new NPA cuts

They can't get enough materials, but highway builders are hopeful

When highway officials told their plight to Manly Fleischmann, NPA-DPA administrator, last month (ENR Sept. 13, p. 24), apparently Mr. Fleischmann was not very much impressed.

With hundreds of major highway projects across the country stalled for lack of steel, Mr. Fleischmann announces that in the first quarter of 1952, highways will get 49,000 tons of steel less than they were allotted during the fourth quarter of 1951. This latest cut brings the figure to 201,500 tons of steel allocated to highways—about 100,000 tons less than the third-quarter 1951 allocation.

The cut in highway steel is almost certain to bring down Congressional wrath on Mr. Fleischmann. During September, when he heard the highways officials and testified before the Senate subcommittee on Public Works, he promised some relief for highways during the coming year. It was expected, however, that public roads wouldn't take further cuts immediately.

• **Bold plans**—Undismayed by this unfortunate turn in the materials picture, highway officials are planning tremendous new projects. Last week wraps were taken off plans for the start of the Yankee Thruway from New York to Boston. And Colorado's long-range Highway Planning Commission completed the preliminary draft of a new 20-year $1,126 million highway improvement program.

Robert Wesley Briggs, design engineer, disclosed last week that detailed engineering plans for the first three miles of the Yankee Thruway (New England Thruway) from New York to Boston are nearly complete and the first contract will be awarded soon.

He is at work with a staff of 53 engineers and draftsmen under retainer by the State Department of Public Works to plan the Thruway from the Westchester-Bronx boundary to the New York-Connecticut boundary at Port Chester.

He describes the highway as follows: "There are to be two express roadways 37-ft wide, one in each direction. These roadways will be separated by a mall varying in width from six to ten feet. There will be a stabilized shoulder, 9-ft 6-in. wide, onto which vehicles may run if disabled.

"At points of access, acceleration lanes will be provided along the express roadway so that vehicles may accelerate up to 50 mph before entering traffic. Similarly, deceleration lanes are provided so that vehicles may leave the express roadways at fifty mph. The design speed for traffic on the express roadways is 60 mph."

• **Extension**—In Greenwich, Connecticut, State Highway Commissioner G. Albert Hill announced plans for extending the thruway along the shoreline from the end of the New York section at Bryam River six miles to the Stamford line. He estimated the project would cost around $15 million.

His plan was immediately attacked by advocates of an inland route for the Yankee Thruway to run north of Greenwich. The opposition has appealed to Gov. John D. Lodge for appointment of a state commissioner to study the merits of both routes.

• **Colorado program**—The long-range Colorado plans are to be financed by higher truck and passenger car license fees and a one-cent increase in the gasoline tax, according to the proposal.

Establishment of an eight member state highway commission with broad policy-making power and authority to draft annual budgets and supervise award of contracts, is recommended. Under this setup, the position of highway engineer would be abolished and replaced by a chief engineer responsible to the new commission for all planning and construction.

• **Highway incidentals**—In Ohio, Gov. Frank J. Lausche has delayed decision on approving the final route for the 241-mi toll highway across the northern part of the state.

He will hear new complaints being submitted by the Cleveland Metropolitan Park Board, and by the municipality of North Royalton. Previous protests have been lodged by Elyria, Berlin Heights, and Maumee.

• **The Alaska Road Commission** last week opened the Anchorage-Seward Highway, a 127-mi stretch through rugged mountainous terrain, linking interior Alaska with its most important south coast seaport.

QUIETER STEEL CONNECTIONS—Rivet-bolts are being used for permanent connections in the steel frame of a 6-story addition to Charity Hospital, in Cleveland, Ohio, to eliminate riveting noises that would disturb nearby patients. The addition will add 125 beds to the hospital. George S. Rider Co. is the architect and The Roediger Construction Co., the general contractor. American Bridge Co. is erecting the steel.

Johnston urges cutbacks in industrial expansion

WASHINGTON—The country seems to be safe from a new inflationary surge for the next two to four months, according to Economic Stabilizer Eric Johnston, but a 30-40% cut in the rate of construction next year will be necessary if prices are to remain steady.

Addressing the World Trade Committee of the Washington Board of Trade he said not only must there be a drastic reduction in industrial expansion, now booming at a $26. illion annual rate, but there must be cuts in residential building.

Honors awarded as ASCE convention attracts 99-year record attendance

Civil engineers from all parts of the country were gathering in New York for the annual meeting of the American Society of Civil Engineers as this issue went to press. With technical sessions scheduled to last from Monday morning through Friday, this is expected to be the largest meeting in the society's 99-year history.

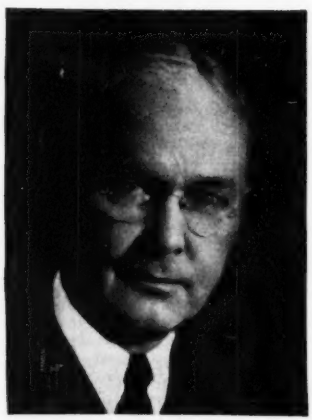
• **New officers elected**—Carlton S. Proctor, consulting engineer of New York, has been elected president of the society for the coming year. New vice presidents are George W. Burpee, another New York consulting engineer, and A. M. Rawn, general manager of the Los Angeles County Sanitary District.

New directors are Walter D. Binger, vice president of the City Investing Co., New York; Frank A. Marston, consulting engineer, Boston; George W. McAlpin, construction engineer, West Virginia State Road Commission, Charleston; James A. Higgs, resident manager for Massey Concrete Products Co. at Atlanta; and Isaac C. Steele, vice president of the Pacific Gas & Electric Co., San Francisco.

Edward C. Dohn of Olympia, Wash., executive secretary of the State Board of Engineering Registration, was appointed a director by the Board of Direction at its meeting to succeed the late Walter J. Ryan who died recently.

These new officers were installed at the annual business meeting of the society last night. At the same meeting, fifteen engineers participated in the prizes and awards presented each year for outstanding technical papers published in the society's transactions. Top prize, the Norman Medal, went to D. B. Steinman, consulting engineer, New York, for his paper "Aerodynamic Theory of Bridge Oscillations."

Frederick Ohrt



Samuel A. Greeley

• **Special features**—Outstanding from the many subjects to be considered at the meeting is the New Jersey Turnpike, now approaching the day when the first sections will be opened to the public. Several sessions are to be devoted to important elements of the design and construction of that great highway, and there is to be a trip of inspection over parts of the turnpike on Friday.

Other features of the meeting include a panel discussion of the report of the Water Resources Policy Commission, which was submitted to President Truman late in 1950 and several papers on snow, ice and permafrost as they affect construction.

• **Four honored**—For outstanding service in the field of engineering, four men last night received the ASCE's highest award—honorary membership. The awards were made at the annual dinner in the ballroom of the Hotel Statler. Here they are:

Frederick Ohrt has been manager and chief engineer of the Board of Water Supply of the City and County of Honolulu, Hawaii, since 1929.

Born on the Island of Maui when the Hawaiian Islands were still a kingdom, he obtained his civil engineering degree at Cornell University in 1911 after first attending the University of Oregon. He also did graduate work at Harvard-M.I.T. school for health officers.

Samuel A. Greeley is senior partner in the Chicago firm of Greeley and Hansen. The firm handles all aspects of water, sewage, industrial waste and refuse works.

Graduating from Harvard College in 1903 with the A.B. degree, Mr. Greeley went on to receive his B.S. degree in sanitary engineering from Massachusetts Institute of Technology in 1906.

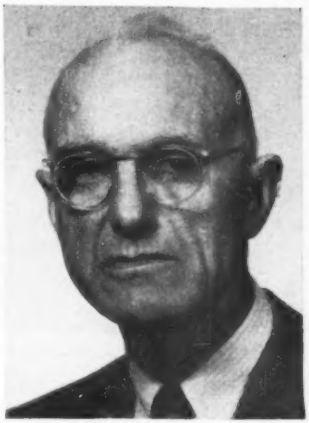
Currently, **Charles Gilman Hyde** is practicing hydraulic and sanitary engineering in Berkeley, Calif.

Educated at Norwich Academy, Conn., and Massachusetts Institute of Technology, he received his B.S. degree in sanitary engineering in 1896.

Jonathan Jones is chief engineer of fabricated steel construction for the Bethlehem Steel Co., and is contributor to numerous research groups.

After graduating from the University of Pennsylvania in 1903 with the A.B. degree, Mr. Jones did graduate work there and received advanced science and civil engineering degrees.

Charles Gilman Hyde



Jonathan Jones

Engineers' pay race to get new rules

Salary stabilization board plans regulation to slow down raids on professional staffs

WASHINGTON—The Salary Stabilization Board is drafting terms of a special regulation on engineers' pay, tentatively scheduled to be issued about Nov. 1. If this does not check the heavy fire on present pay rules from many professional quarters, congressional action may follow at the next session.

Today as engineers move steadily to better paying positions in new projects, many firms complain they have their hands tied by government rules that prevent them from making competitive pay offers to hold their own staffs.

Both present employers and those seeking new men have developed an array of techniques, both within and outside of the framework of stabilization rules, for attracting engineers. These are reported in common practice:

- Upgrading into classifications above those normally prevailing.
- Guarantee of attractive overtime pay.
- Giving term contracts or offering other security.
- Granting liberal expense provisions.
- Offering generous bonuses.
- Providing housing.
- Offering pension plans, sick benefits, vacations, and other fringe benefits.

Competition for engineers is particularly bitter in areas where large defense construction is in progress. Other areas also are experiencing greater than normal turnover—but nothing critical—according to an ENR survey last week.

• **Basis given**—In formulation of its new regulation, the SSB is weighing recent recommendations of the Engineers Joint Council (ENR Oct. 4, p. 23). It also has before it recommendations of the Senate Banking and Currency Committee to exempt from controls "the wages, salaries and other compensation paid professional engineers who are employed by engineering firms engaged in the practice of the profession."

In its new regulation, the SSB does not plan to exempt engineers from controls. It fears exemption would intensify the bidding for engineers. Purpose of the new regulation is to help hold engineers to their jobs. One method considered is to fix minimum time limits which must elapse between pay raises and promotions.

Of the two sets of recommendations before it, the SSB, is more likely to favor the broader provisions of the Engineers Joint Council. It will also supplement recently issued "white collar" rulings (ENR Oct. 11, p. 88) as they apply to engineers.

• **Still a chance**—Recommendation of the Senate Committee are not to be counted out entirely, however. They stem from an amendment to the Defense Production Act offered by Senator John W. Bricker of Ohio.

Because it had little chance of passing this session, the amendment was shelved by the committee in favor of prompter action. It agreed to present the amendment to the SSB as an indication of committee sentiment.

Bricker says he hopes the matter can be handled administratively. But he promises that if the new SSB regulation is insufficient to meet the problem, he will press for the amendment again in January.

• **Hard hit**—In Bricker's own state the situation appears especially acute. In Columbus, Cincinnati, and Toledo serious dislocations are reported. Ten complaints of job "pirating" have been lodged with the Toledo Chapter of the Ohio Society of Professional Engineers. The Society is investigating to see if further action should be taken.

Alden E. Stilson of the Columbus Chapter, OSPE, and a consulting engineer, has taken complaints to Senator Bricker in Washington. He says his own staff has been "pirated" by contracting firms for a large new electrical plant in the area.

Defense industries are offering competition for the services of engineers in the Cincinnati district. Several consulting engineers are reported to have lost staff men to large defense industries, including the Atomic Energy Commission.

• **Prevailing trend**—Other key industrial centers are experiencing similar difficulties. In Pittsburgh and Philadelphia, centers of huge steelmaking expansions, pirating is reported rife.

Not only new firms, but established ones are playing at the game. One firm of consulting engineers in Philadelphia blames loss of 25 engineers on latitude in job classification under stabilization rules.

An executive of a civil engineering firm in Buffalo, N. Y. summarizes his situation this way:

"New engineering concerns are coming in here to build defense plants and do other work growing out of the defense program. Having no previous salary history here, they can set a high rate of pay. We are pinned down on our wage scale by the government. Consequently, we can't compete with these new firms."

Stabilization officials in Detroit are now investigating reported violations of regulations. They are looking for new companies that have been established since the freeze, which are paying higher than prevailing rates. They are also scrutinizing established firms who may be misclassifying persons to keep them through higher pay.

In Chicago, engineers are being offered such extra-legal inducements as unlimited expenses for out-of-town moving.

• **Turmoil in South**—Leading the country in new industrial expansions, the South is feeling a severe impact on its engineering manpower. Here private industries and government agencies alike are engaged in high pressure recruiting programs.

State and municipal public works engineering staff are in many cases being depleted to a point where agency operations are seriously hampered.

The Tennessee State Highway Department, for example, has lost men in categories from senior resident engineer down. A large number of designers have been lost from the Plans Division, and there is not a single structural steel designer left in the Bridge Division. State departments in Atlanta, Ga., and Charleston, W. Va., are reported in similar straits.

• **Elsewhere**—While the plight of state and municipal agencies is particularly severe in the South it is by no means confined to the South. Columbus, Cincinnati and St. Louis report difficulties in this field.

In the Sacramento district of California, where huge defense expansions are in progress, the Corps of Engineers, busy on such projects as Pine Flat, Isabella and Folsom Dams, finds the money angle has taken engineers with 20 years of service. The California State Division of Highways is finding vacancies unfilled because of higher pay by private contractors and the booming aircraft industry.

There is less dislocation in New England and in regions west of the Mississippi to the Rockies, reports indicate. In these area both private and consulting firms and local government units are enjoying comparative serenity except for isolated instances.

• **Other pressures**—Even in these

regions, however, subtle pressures are at work to lure engineers to larger firms in other sections of the country. A description of one such approach reported from Oklahoma follows:

"First a smoothly worded display ad is carried in district newspapers stating the need for a certain company for engineers.

"It states that a representative of the company will be in the district soon for personal interviews. Later some engineers receive telephone calls inviting them down for an interview, or the invitation may come to them by mail.

"Recently a representative of a major company arrived in Tulsa. He interviewed several engineers and offered them jobs at a salary increase of at least 10%. The applicants were told, however, they would have to make a trip to the company's home office.

• **Take trip**—"An air trip with all expenses paid was arranged for the applicants and they received every courtesy on arriving at the company's home office.

"They were informed the company was operating at present on a 40-hour week basis, but soon they expected to start full-scale operations on a 48-hour week schedule. They were told that when that time arrived the engineers would be contacted—meantime, they were told, 'Think it over!'

"A short time after the engineers returned home they received personal letters from the company stating:

'Our 48-hour schedule is now in operation. Please consider the fact that on the basis of 48-hours per week employment, with the overtime involved, this would equal a 30% increase in salary over your present pay. We request that you consider our offer, and advise us of your decision as soon as convenient.'"

Air base jobs shifted

President Truman is expected to sign a bill this week which makes these changes in previous authorizations for air base construction:

$50.9 million at McGuire Air Force Base, Fort Dix, N. J. in place of Friendship Airport, Baltimore, Md.; $22.2 million at Travis Air Force Base, Fairfield Suisin, Calif, instead of Hammer Field at Fresno, Calif.; $1.7 million at Sioux City, Ia., airport instead of Offutt Army Air Base at Omaha, Neb.

These changes will result in a net saving of $617,000 on original costs approved by Congress, it is estimated by the Air Force.

Private utilities push new power expansions

Continuing a heavy trend, power plant expansions by private utilities highlighted new construction plans announced last week.

• **Philadelphia Electric Co.**—announced it has raised planned expenditures during the next five years to $365 million. Added to the $217 million already spent since 1946, total postwar expansion expenditures will reach over $500 million.

• **Mississippi Power & Light Co.**—announced plans for a $30 million 210,000 kw steam generating plant, largest in the state, at Cleveland, Miss.

• **West Penn Power Co.**—announced construction of an $18 million addition to its Springdale, Pa., generating plant will be started soon. It will add 135,000 kw capacity to the plant which supplies key industries in the Pittsburgh district.

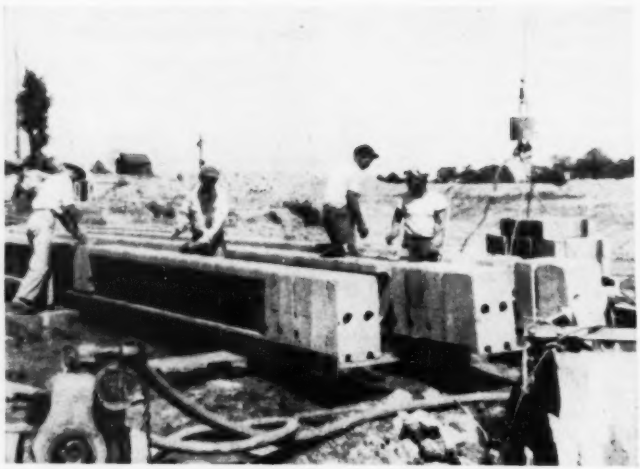
Savannah River housing expanded to 3600 units

WASHINGTON—The Housing and Home Finance Agency this week announced steps taken to speed defense housing urgently needed in the Savannah River area of South Carolina and Georgia. The housing is for workers at the Atomic Energy Commission installation.

Under the program 2,450 defense housing units will be added to the 1,150 units already scheduled. Existing government aids will be used to start as much of the construction as possible. Completion of the program will depend on appropriations by Congress.

START OF AN ALUMINUM WALL—Installation of stamped aluminum panels which will sheath its exterior has begun on Aluminum Company of America's 30-story skyscraper in downtown Pittsburgh. Fabricated from ¼-in. aluminum sheet, the walls will be backed with 4-in. reinforced concrete for insulation. Window units, designed to rotate for cleaning purposes, are built into the panels. They measure 4½ x 4 ft. Completion of the building is scheduled for May, 1952. (Newman-Schmidt photo.)

I-SHAPE BLOCKS, end blocks (right) and cable-depresser blocks (left) are laid . . .



SIDE BY SIDE on steel I-beam platforms, to be made into beams for the John R Road bridge, near Detroit, Mich. Strands are passed through holes in end blocks and . . .

Prestressed block beams span 43 ft

MACHINE-MADE, I-SHAPE concrete blocks clamped together with high-tensile steel strands will soon be carrying highway traffic over Red Run Drain, near Detroit, Mich.

Converted into concrete I-beams by prestressing, the blocks form the three spans of a 130-ft long, two-lane bridge. The 43-ft spans are 13 ft longer than those of the Madison County, Tenn., block-beam bridge, built last year (ENR Jan. 18, p 39). The Tennessee structure, first prestressed concrete bridge to be opened to traffic in the U. S., is made of hollow rectangular blocks in contrast to the I-shape blocks used for the Red Run bridge.

• **Block beams save money**—The new bridge is on John R Road in Royal Oak Township. It replaces a bridge that had to be demolished because of the widening of Red Run channel for flood control.

Prime considerations in selecting prestressed concrete for the superstructure were unavailability of structural steel and need for speed in construction. The Corps of Engineers, in charge of the flood-control project, was anxious to get the road back into service as soon as possible.

The decision to use concrete block was determined by preliminary cost studies. These indicated that 5,000-psi concrete cast in place would be bid at about $200 per cu yd. In contrast, 5,000-psi concrete block, which delivered to the job cost only $45 per cu yd, was bid at $150 per cu yd in place.

It is interesting to note that during the past decade the cost of cast-in-place concrete has risen several times as rapidly as that of concrete block in place. This appears to be primarily due to the rise in labor and material costs for on-site construction work without accompanying technological improvements to offset them during that period. In the meantime, improvements in block-making machines increased production many times over pre-war output. These advances held down block costs by offsetting rising cement, aggregate and labor costs.

• **Other advantages**—Designers of the John R Road bridge also claim: The beams can be made by unskilled labor. Depth of beam is about the same as for structural steel. Beams can be ready to be placed by the time substructure is completed. Painting is not required.

The designers say the bridge is competitive with structural steel in cost. Contract price is $99,220.

The bridge has a 24-ft wide roadway, with a sidewalk on both sides, making the total width 32 ft. Its substructure consists of two cast-in-place concrete bents and two abutments. These support spans formed by placing 24 block beams side by side.

• **Basic elements**—Beams are built up of three types of block. The greater part of each beam consists of I-shape blocks. Solid rectangular end blocks are used for the anchorages. And solid depresser blocks, inserted at beam third points, serve as positioners for the prestress strands.

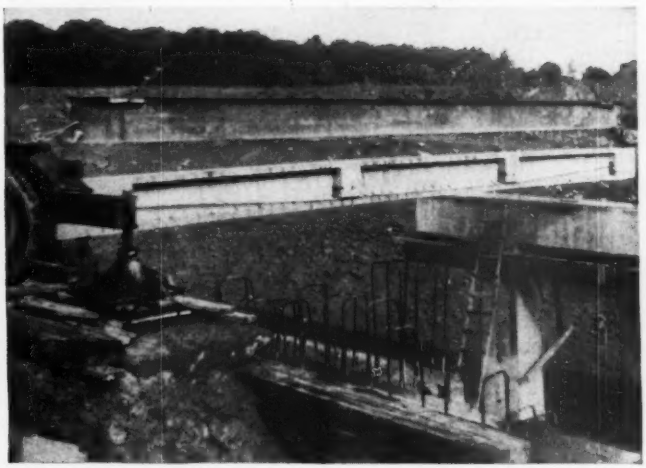
All blocks are 24 in. deep and 8 in. thick. They have a minimum compressive strength of 5,000 psi.

The I-blocks have a 2½-in. thick web and 16-in. flanges. The top flange is 3 in. thick, the bottom 2¼ in.

End and depresser blocks are 16 in. wide, same width as the I-block flanges. Four end blocks, with holes at mid-depth for the steel strands applying longitudinal prestress, are needed to resist anchorage forces. Two depresser blocks are required at each third point to hold these strands just above the bottom flange in the center portion of the span. Sloping down from the anchorages, the strands pass through slots in the sides of the depressers. The eccentricity of the prestressing force gives a greater prestress in the concrete where stresses caused by dead and live loads are largest.

To permit transverse prestressing, to tie the beams in each span together, a groove is provided in a face of the end and depresser blocks. When the blocks are assembled to form a beam, each groove becomes a hole in the beam. As the beams are positioned on the bridge, steel strands

HYDRAULIC RAMS tension the steel to prestress the beams. End-supported . . .



BLOCK BEAM is suspended from a steel equalizer beam and erected with a crane. The bridge deck consists of these beams set side by side and prestressed transversely.

are slipped through the holes for transverse prestressing.

One galvanized strand is used for transverse prestressing at each end of the span and at each third point. These strands are 0.6 in. in diameter and are composed of 12 wires.

Two strands are used for the longitudinal prestressing of each block beam. These are 1 in. in diameter and are composed of 19 wires. A fitting is attached to each end and a threaded stud is inserted in the fitting. Turning a nut on this stud permits adjustments to be made in tension. The nut acts against an 8½ x 14-in. by 1½-in. thick steel plate, which distributes the prestress over the end block.

• **Prestress creates beams**—Block beams were assembled near the bridge site. The blocks were laid side by side on the horizontal webs of steel I-beams. Flanges of these beams served as straight edges for aligning the blocks. Strands were slipped through the end blocks, positioned on both sides of the I-block webs and caught in the grooves in the depresser blocks.

Grout made with high early strength cement was poured between the blocks, and a small tension was applied to the strands to make the joints tight. Four days later, the full prestress was applied with a pair of hydraulic center-hole rams. To equalize the tensioning, a single source of pressure was used to exert the push on both rams.

The initial tension was 50,000 lb per strand, equivalent to a steel unit stress of 86,655 psi. The designers expect that plastic flow of the concrete may decrease this to 72,790 psi. At that time, the average age prestress on the beams will be 640 psi. At midspan, while carrying their own weight, these beams would then have a maximum compressive stress of 1,140 psi in the bottom flange and 140 psi in the upper surface of the top flange.

Under the full prestress, the block beams, which weighed four tons each, were self supporting. They were picked up by a crane and transported safely to the bridge. Suspended from a structural steel equalizer beam, they were supported only at their ends during this move.

Transverse prestressing cables were threaded through the beams as they were erected. After each span was in position, a concrete slab varying in thickness from 3 to 4¾ in. and 3-ft wide sidewalks were poured over it. When this slab had cured sufficiently, each of the transverse strands was tensioned to 27,000 lb with a ram.

• **Problems solved**—Some problems arose during construction, principally due to the block, that the contractor had to solve: It was difficult, for example, to manufacture a block with a sufficiently uniform surface for mortaring; at first, the grout ran out of the joints between blocks. This was stopped by plastering the outside of the joint prior to grouting. Also, to reduce the head on the plaster, the grouting operation was broken into two steps. Only part of the joints was filled in the first step and allowed to attain partial set; then, the remainder was grouted in a second operation.

Some cracking of the webs of the I-blocks occurred when the blocks were transported to the assembly yard. This was prevented later by more careful handling.

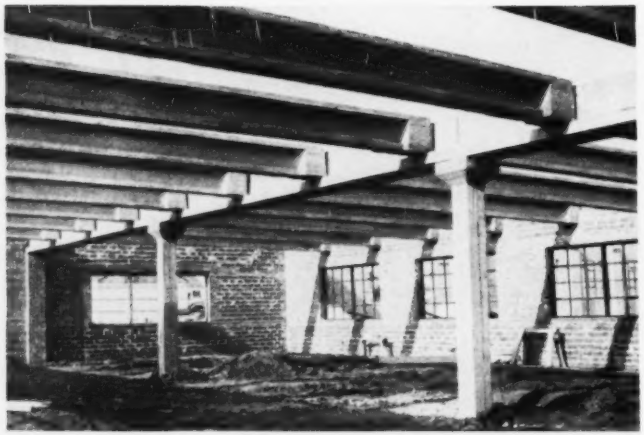
Still another problem arose because the tolerances for the machine-made blocks could not be maintained precisely. More clearance than originally anticipated had to be provided between the beams, and the longitudinal spaces thus formed had to be grouted. If the blocks had been perfectly made, of course, this operation could have been eliminated—but then the cost of the blocks probably would have been much greater.

• **Time saved**—The John R Road bridge is being built for the Red Run Drainage Board, which is composed of commissioners from Oakland and Macomb counties. Bids were taken March 23, but actual construction did not start until June 18. While the contract calls for Nov. 15th completion, the contractor—L. A. Davidson, of Lansing—expects to have the bridge opened to traffic by Nov. 1.

The structure was designed by Johnson & Anderson, consulting engineers, Pontiac, Mich. Blocks were furnished by Standard Building Products Co., Detroit, and strands by John A. Roebling's Sons Co., Trenton, N. J.

The design was the result of much study and testing by Johnson & Anderson, particularly in determining a satisfactory thickness for the end blocks.

As an indication of the progress being made with this type of construction, contracts were awarded last month for a bridge of similar design, but with spans 5 ft longer. Also, crossing Red Run Drain, it will be on 12-Mile Road, near Detroit (ENR Sept 20, p 27).



PURLINS 30 ft long for a Tulsa, Okla., building were precast and prestressed.

ROOF BEAMS for a second building, also precast and prestressed, span 40 ft.

Prestressed roof beams get first U.S. tryout

FOR THE FIRST TIME in this country fully prestressed concrete beams are being used to support a roof.

Two buildings incorporating these structural members were completed simultaneously in Tulsa, Okla., by the same contractor—P. F. Blair and Son. In one, the lightweight concrete roof is carried on 30-ft purlins. In the second, the roof is supported on 40-ft beams. They were designed for a 20 psf live load.

For both structures, the roof members were cast on the ground, prestressed and erected with a crane.

• **Prestressed purlins**—The building with the 30-ft purlins is 60x204 ft in plan, one story high. One end of the purlins rests on the outer brick walls, the other end on a precast reinforced concrete girder at the center of the building.

Spaced 8 ft apart, the purlins are 18 in. deep. For the greater part of their length, they are I-shape in section. They have a 4-in. web and 3-in. thick flanges. The top flange is 16 in. wide, the bottom flange 10 in. wide. At the ends, the purlins are solid, 16x18in., to resist anchorage forces. They are made of concrete with a minimum strength of 4,500 psi.

Prestress was applied with a single 1-in. round, 7-wire, galvanized steel bridge strand. Placed in a hole in the web of each purlin, the strand is anchored at the ends with threaded swaged fittings (ENR Mar. 2, 1950, p 34).

The anchorages are 10 in. above the bottom of the beams—1 in. above the beam center. From here, the strand curves down so that it is only 2¼ in. above the beam bottom at midspan. The eccentricity of the prestressing force produces bending moments varying throughout the length of the purlins in the same manner as the applied loads but opposite in sign. Anchoring the steel above midheight at the ends improves the resistance to diagonal tension in those regions. The initial prestressing force was 72,000 lb.

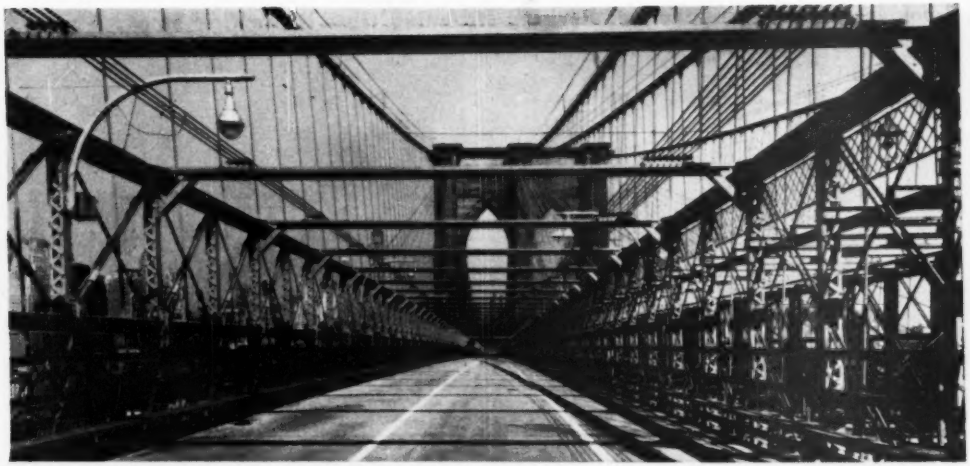
• **40-ft beams**—The building with the long beams is 40x120 ft in plan, one story high. Spaced 10 ft apart, supported at both ends on the outer brick walls, the beams are 24 in. deep at the ends and 26 in. deep at midspan. They have a rise of 9 in. at the center. Like the purlins in the other building, they are I-shape in section. They have a 3-in. web. The top flange is 12 in. wide and 4 in. thick. At midspan, the bottom flange is 8 in. wide and 3 in. thick, but is flared near the beam ends to join smoothly with the solid end blocks. Concrete for these members also had a minimum strength of 4,500 psi.

Prestress was applied with fourteen ¼-in. round steel wires placed in three layers. Anchored at the beam ends, these wires are straight, the rise of the beams causing a varying eccentricity of the prestressing force. This produces the largest compressive prestresses where the tension stresses due to applied loads are largest.

Ends of the steel wires have button heads, formed by cold up-setting (ENR May 10, p 40). Prestress was applied by jacking against steel plates bearing on the button heads. These plates then were shimmed to maintain the tension, and the shims later were embedded in concrete. Initial prestress in the wires was 145,000 psi.

The buildings were constructed for Midwestern Geophysical Laboratories. The purlins were designed by John A. Roebling's Sons Co., the beams by C. C. Zollman, then associated with the Prestressed Concrete Corp. of Kansas City, Mo. Building design was by P. F. Blair, Jr. Work on the first building started in Dec., 1950, and on the second in May, 1951. Both buildings were occupied by the owner on July 7.

Blair is now pouring concrete for prestressed beams for a school building in Tulsa. He has signed a contract for another job involving 6,400 sq ft of precast roof deck, which will be supported on seven 50-ft prestressed beams. He is also experimenting with prestressed roof plank made of block.



SIX LANES FOR AUTOS, none for rail—that's the new deal on this most famous of all bridges. (Lincoln Electric Co. Photo)

Brooklyn Bridge rebuilt for today's traffic

PROGRESS at last has forced the Brooklyn Bridge to serve modern traffic needs—and in a way that satisfies the crustiest antiquarians.

Where the Roeblings' 68-year-old East River bridge formerly carried two street car and two elevated-line tracks, along with about 3,000 vehicles a day, it soon will carry nothing but vehicles —6,000 of them daily.

Need for this change has been obvious for a long time. While the subway was replacing the "L," buses were replacing the trolleys. And motor traffic of all kinds has been growing, as everyone knows.

But when New York's Department of Public Works decided to do the obvious, it was faced by a ticklish civic situation, which led ultimately to some exacting construction work.

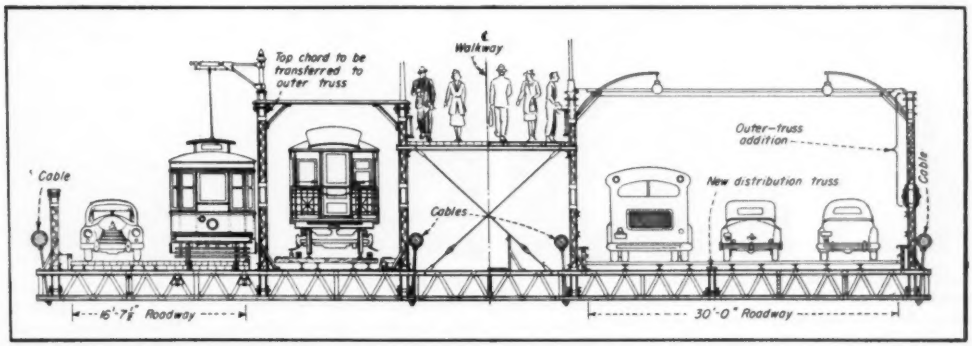
The main objective of reconstruction was to provide two 3-lane roadways, each unobstructed by an existing intermediate stiffening truss. Cheapest way to do this would be to replace the old truss' function by putting in a completely new, deep outer truss fabricated of rolled sections.

But New York's Fine Arts Commission, which must pass on modifications of the city's historic landmarks, said such a change would be inconsistent with the bridge's architecture: the truss would destroy its 19th Century charm.

So it became necessary to revise the truss by using the same structural elements that the Roeblings had at hand: small latticed and boxed members for compression, and eye-bars for tension.

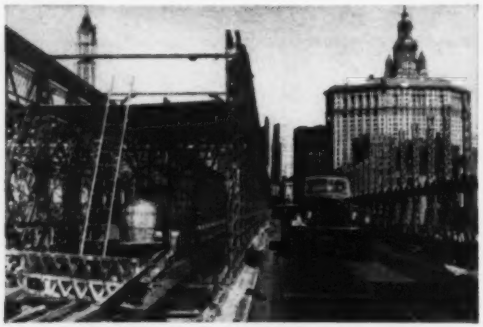
Selected to design the revision was the bridge's biographer and best-known admirer: D. B. Steinman.

The Steinman firm came up with a design that doubled the height of the outer truss, making it 17 ft., the same as the truss to be removed. To attain this height the old 8½-ft. outer truss was retained and topped by an addition containing new posts, struts and eye-bars. Its top chord was transferred from the intermediate truss. In the floor system, too, much of the original steel was retained, not because of appearance factors, but because the steel was deemed in excellent shape. All

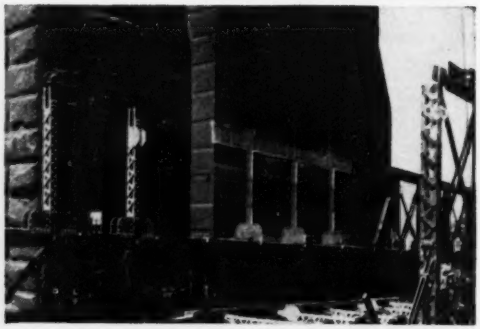


THEN AND NOW—To allow three full lanes in each direction, intermediate stiffening truss is eliminated, its function being replaced largely by deepening outer truss. A shallow truss remains at the former location.

Brooklyn Bridge reconstruction: Revising stiffening truss is the first step . . . . . .

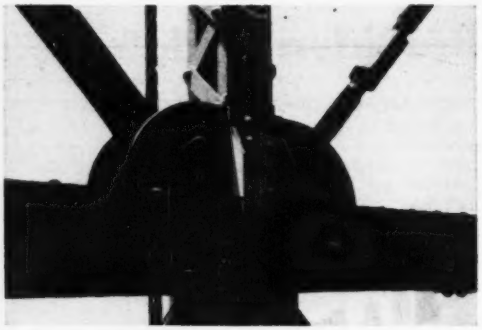


DOOMED TRUSS (center) separating old roadway from rapid-transit track. To avoid unbalanced stresses on towers, contractors worked both ways from both towers at uniform rates. New posts on outer truss await top chord from old truss. Maximum 130 ft of top chord could be out of service at a time. (ENR photo)

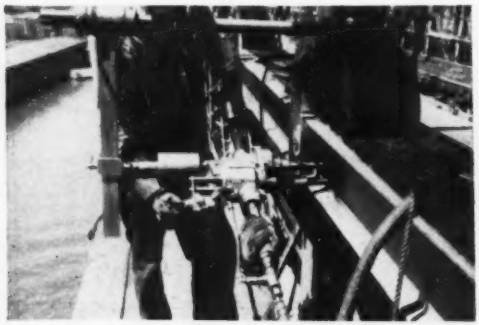


TIGHT FIT—To make room for truss addition where it passes through towers, dense granite was routed out. Truss addition, in this case with new steel in its top chord, lies on deck ready for setting. Fitting new steel to old required ingenious application of modern devices to old-fashioned steel design. (ENR photo)

FOR NEW CONNECTIONS—Cover plates of old outer-truss top chord were cut at each panel point to admit vertical-splice channels (side notches) and gussets for diagonals. Gussets will be riveted to inside of old chord's web channels. (Phil Wolf)



VITAL DETAIL—Outer-truss additions join the original truss at this standard connection. Ticklish problem was correct location of rivet holes. A center-punch jig attached to the lower connecting pin spotted all holes accurately, relative to the pins.

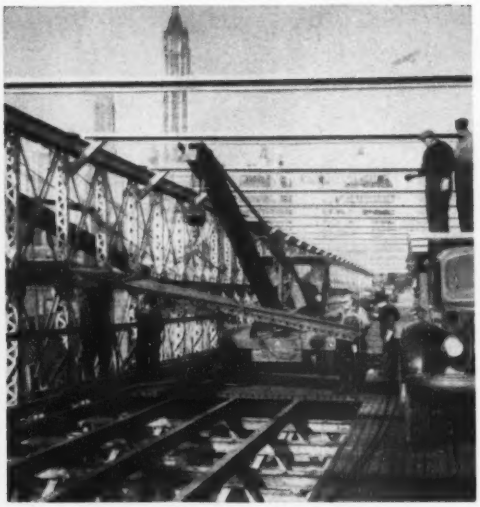


FOR DRILLING—Many positions necessary for drilling old steel in place are awkward and even dangerous, so mechanical drill-handling is a big help. Here, on a platform hanging out over East River, iron worker operates an air drill that is held in position by an adjustable-clamp frame. An air ram (above his right wrist) keeps pressure on the drill. (ENR photo)

FOR RIVETING—All rivets for the truss addition are accessible to an ordinary hammer, but bucking is another matter in the old steel. This short air-ram bucker has a rubber-hose handle, so it can be poked around corners and into tight spots. Other buckers are made of steel shafting, bent to various suitable shapes, to be applied as levers. (ENR photo)

. . . . . Replacing floor is the second step

DISTRIBUTING TRUSS uses part of old intermediate-truss lower-chord steel. Here ironworkers place fabricated diagonals for the distributing truss. Welded connections replace originally-designed riveted construction at several points in floor. Next steps: Removing track and deck; preparing for new deck.



STEEL DECK GRATING 3 in. deep goes to place easily over new 8-in. I-beam stringers and old floor-trusses. Final deck step will be to pave over the grating, with 3 in. of concrete. Small mobile crane was the principal hoisting unit throughout Brooklyn Bridge reconstruction. (Klevens Corp. photo)

joint connections would be riveted.

Low bidder for the work was the Klevens Corp., Brooklyn, which is performing the wrecking and paving work. Klevens sublet most of the structural work to Terry Steel Constructors, New York. Contract price is $3,317,536. (Work on approaches is expected to bring the total modernization cost to $7,000,000.)

Work began in 1950, on the south roadway, traffic being maintained on the north side. This year traffic is using the new south deck while work proceeds on the north side. All six lanes will be ready next spring.

Much of the construction is detailed in pictures, where it will be noted that some welding is being done in the deck structure.

This switch to welding took place when it was found that brittle spots in light steel shapes frequently made it impossible to drill a proper rivet hole. These brittle spots are said to be caused by nonuniform quality of the original steel.

Another problem was generated by the requirement of eye-bars for diagonals and counters in the outer-truss addition. It was hard enough to get the bars at all, they're so rarely used nowadays. But the real difficulty was to make them fit, then to tighten them correctly.

Because of long-time strain adjustments in the old truss there is no such thing as a standard pin-to-pin distance, so all new eye-bars have turnbuckles.

Before installation, all eye-bars are punched to determine the zero marks for an 8-in. gage extensometer. After installation, eye-bars are tightened with the turnbuckle until the extensometer shows 0.0020 in. elongation in the 8 in., which is equivalent to a 7500 psi tension in member.

Other problems are presented by awkward drilling positions, difficult access for bucking rivets where new steel joins old, and by the heavy coats of red-lead and paint that have accumulated on the bridge. Some of the steps taken to meet these problems are described in picture and caption. The red-lead problem comes up wherever old structural elements are removed by cutting torches. Fumes are noxious, so cutters wear masks and keep away by using long torches.

During cutting, fire is a hazard, especially near the wooden rapid-transit ties and stringers. One special fire-control device is a set of shields on rail-mounted scaffolds. The shields funnel hot sparks to pans on the scaffold platform, keeping them from falling into the dry timber of the track-support system below.

There are two of the rail scaffolds, which telescope with the aid of hand winches to provide access to work at various heights. In addition, there are six scaffolds of this type on casters, for work from the deck.

Another tool that was useful in dismantling is an air-driven cutting wheel for removing rivet heads. Using a nylon-grit wheel that makes a 3/32-in. cut, this tool slices the heads off like a knife cutting butter.

The design and construction on all of the city's bridges is the responsibility of the Department of Public Works. The Steinman firm made all necessary drawings for preliminary and final design, wrote the specifications and later checked contractor's detail drawings.

Frederick H. Zurmuhlen is commissioner of the Department of Public Works. The design and supervision of construction was the responsibility of J. Frank Johnson, director of the division of bridges, and the resident engineer for the department was Theodore Mombelly.

The contract was awarded to the J. K. Welding Co., later re-named the Klevens Corp.; Robert E. Freeman is in charge for Klevens. The entire steel work was fabricated and erected by the Terry Structural Steel Co. of New York City, the president, Harry Terker, being directly in charge.

FLAT-SLAB FLOORS ONLY 5½ IN. THICK span as much as 21 ft in this new Los Angeles apartment building. An interesting exterior wall surface was obtained without resort to expensive form work.

Thin flat-slab floors span long bays

THE just-completed Wilshire Manor apartment building in Los Angeles is distinguished by what are probably the thinnest flat-slab concrete floors spanning the largest panels in U. S. construction history. Specifically, the floor slabs are 5½ in. thick and the maximum panel size is 21x17 ft.

In calling for such thin slabs, the designer took advantage of these factors: (1) a new live-load-reduction formula recently adopted for the Los Angeles building code that results in a design load of 29-lb-per-sq-ft, (2) lightweight plaster partitions, and (3) high-strength concrete in the floor slab developed by the vacuum process. The slabs were stress analyzed by a model method previously used on other Los Angeles buildings. This analysis assured full stress development in both concrete and steel as compared with normally used empirical methods.

The eleven-story building will contain about 150 high-rent apartments. Since the location and the appointments were of necessity expensive, the owners desired to reduce the cost of the structural frame to a minimum. This was accomplished by the aforementioned thin-slab construction, together with relatively simple exterior forming.

Vacuum process used in placing the slabs developed 4,000-psi concrete at 28 days. This type of placing was adopted originally for two reasons: (1) to obtain high-strength concrete and (2) to reduce the number of sets of forms needed by permitting earlier form stripping. The first objective was obtained. However, the building department asked that the floor slab forms be left on for 14 days, so three sets of forms were necessary. Had the contractor been able to strip forms earlier, only two sets would have been required. The savings would have easily offset the additional cost of the vacuum process.

Because of the irregular shape of the building and the random spacing of the interior columns, an exact analysis of slab stresses was impossible by normal methods. For that reason, the designer had the slabs analyzed by a model method as previously mentioned. This method, called Presan from its full name of Photo-Reflective-Stress-Analyzer, was developed first for the analysis of the Parklabrea housing project in Los Angeles (ENR July 7, 1949, p 70). It involves loading a mirrored model of the floor slab by air pressure and measuring deflections. It gives bending moment contours that can easily be adapted to floor-slab steel layout.

Lightweight plaster interior partitions further reduced dead load. Result was that the 6-in. exterior walls were ample for seismic (horizontal) loading.

Vertical loading is resisted by reinforced concrete columns. Cumulative effect of reduced live and dead loads resulted in exterior columns only 14½ in. square and interior columns only 16 in. square.

Structural design of the Wilshire Manor apartment was performed by Richard R. Bradshaw, Los Angeles structural engineer. Architect was Martin Stern, Jr., of Beverly Hills. Contractor for erection of the structural frame was the Wm. J. Moran Co. of Los Angeles.

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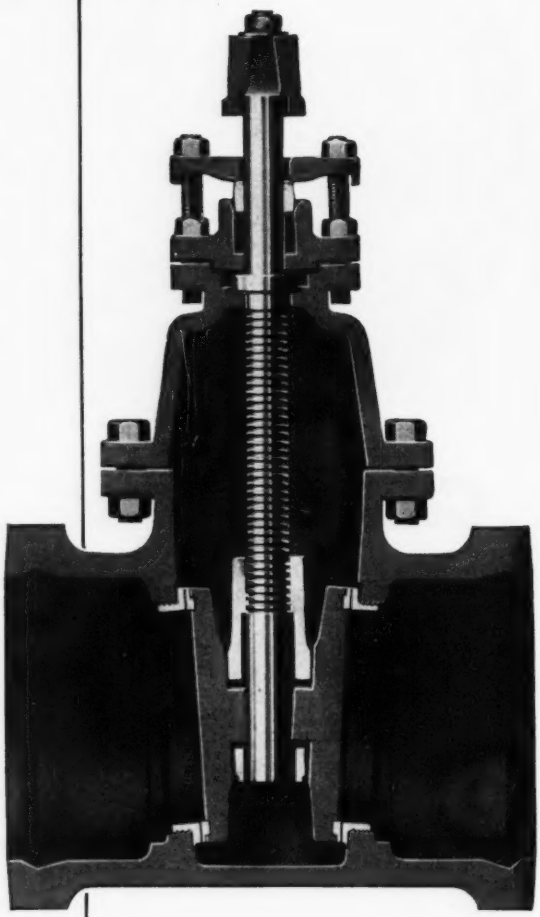

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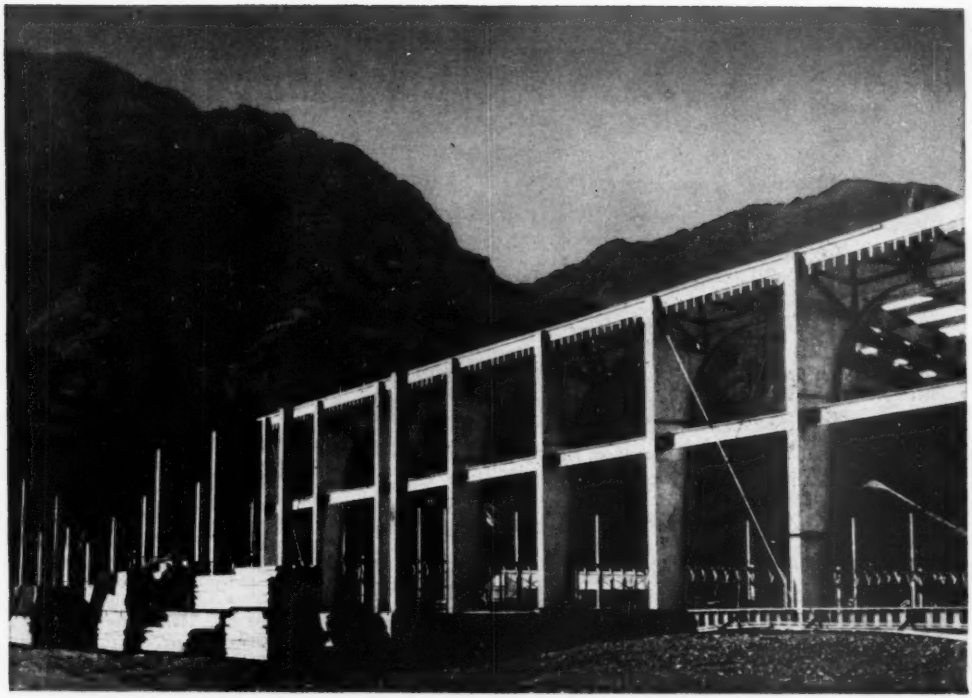


Rigid frames composed of built-up members cost less than rolled sections for . . .

Field house for champions

John D. Griffiths
District Engineer
American Institute of Steel Construction
Omaha, Neb.

CONSTRUCTION COSTS for structural steel building frames may sometimes be reduced by switching from rolled sections to members built up from plates.

A case in point is the new 160x427-ft field house for Brigham Young University at Provo, Utah. Providing a basketball court for the 1951 winners of the National Intercollegiate Invitation Tournament, plus 8,000 seats for spectators, the building has a structural steel frame, a large portion of which consists of rigid frames with built-up members. Bids for this design ran 12% lower than for an alternate rigid-frame design with rolled sections.

Comparative cost estimates also were made for other materials and construction methods. The design used appeared to offer the greatest economy.

• Uniform strength sought—For the lower cost design, the structural engineer called for tapered sections built up of three plates joined by submerged-arc welding. Not only did this construction give the frames an appearance that pleased the architect, but it proved to be an efficient structural design. Strength of the tapered members along their lengths conforms more closely to the strength requirements of the design for bending moments than does the strength of rolled sections.

The building incorporates a total of 15 frames. Spaced about 20 ft apart, they span 160 ft.

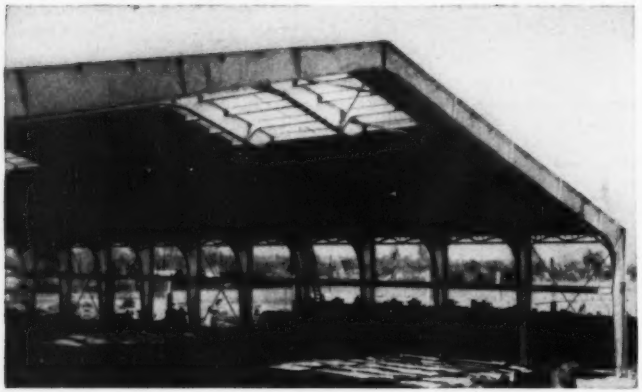
The frames are 30 ft high at the columns and 50 ft high at the crown. They are composed of a ¼-in. web joined by a $\frac{5}{16}$-in. continuous fillet weld to 14-in.-wide flange plates. These plates are ¾ in. thick for the rafter portions of the frame and 1¼ in. thick for the knee sections and columns. The rafters vary in depth from 3 ft at the crown to 4 ft at the haunches. The columns taper from 4 ft at the top to 2 ft 4 in. at the bottom. Average weight of the columns is 180 lb per ft and of the rafters 140 lb per ft.

For the rolled-beam alternate, 36-in. 150-lb wide-flange beams would have been required for the rafters and 194-lb beams for the knee sections and columns. In addition, the knees and upper portions of the columns would have had to be reinforced with 12x¾-in. flange plates. Average weight of the columns would have been 224 lb per ft and of the rafters 161 lb per ft.

The engineer was able to save about 12% of the steel tonnage with built-up tapered sections.

If this percent of weight saved is compared with the percent of cost saved (also 12%), the latter percentage appears relatively high. Ordinarily, the cost of extra fabrication required for built-up sections offsets savings due to weight reduction. The explanation for the equal percentages of weight and cost saved on the Brigham Young University field house is that plates were available locally—from the Geneva steel mill at Provo—whereas rolled sections had to be shipped from the East.

Though mill-supply conditions were of unusual influence in this case, designers in other locations will find it



FIELD HOUSE FRAMES span 160 ft. Depths are 3 ft at crown, 4 ft at haunch, 2 ft 4 in. at base. Weight saved equals cost saved: 12%.

well worth while to investigate the cost-reducing possibilities of built-up sections when the supply of steel plate is normal.

• **Erection was rapid**—Plans for the field house were prepared so rapidly that steel bids were taken one month after the building board decided to proceed with the project. In a little more than three months after the steel subcontract was awarded, the steel erector put up the last of the rigid frames. In less than four months, he finished up all the details of the main field-house structure.

With the steel in place and the steel workers off the job, the general contractor and other subcontractors were able to proceed rapidly with the many finishing operations. In spite of some material shortages, the field house was ready for the first game in less than a year after the building-board's go-ahead signal.

Total cost of the entire project is estimated at $900,000 to $950,000. In addition to the 8,000-seat basketball court, the field house includes two large practice gymnasiums, two smaller gyms for boxing and wrestling, four squash and handball courts and many team rooms, classrooms and locker rooms. Permanent fixed construction was used for 4,500 of the 8,000 seats. The balcony deck is formed of steel channel risers and steel plate treads, with a 2-in. concrete fill over each plate.

Fred L. Markham and Richard W. Jackson were associated architects on the project; H. C. Hughes, structural engineer; Mark B. Garff, Ryberg and Garff, general contractors; and Provo Foundry & Machine Works, steel fabricators. Mr. Markham and the steel fabricators are in Provo, Utah; the others are in Salt Lake City.

Notes on legal decisions

Summaries of decisions relating to construction work prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill Book Co.)

Uncompleted work of deceased architect

"It is well established that if a member of a skilled profession, under contract for the performance of professional services, dies after part performance but before complete performance his estate is ordinarily entitled to recover the full reasonable value of the services rendered, not exceeding, however, the sum or rate fixed by the contract. That doctrine frequently extends to any termination of contract brought without the fault of either party."[1]

As to fixing the amount of compensation, the court in its opinion further stated: "Members of skilled and learned professions, as was said in Kent v. Darman, 137 A. 467, are not limited in the determining of reasonable compensation to the exact amount of time devoted to a project. There are other ways of proving the reasonable value of services. But we think under the circumstances of this case, where an architect dies many years after his employment by a public body, leaving his work far short of completion, his personal representatives may not make their case by proving estimated costs. They are entitled to recover the reasonable value of the services rendered, due credit being given for payments already made, but they may not base their recovery on the estimated costs of construction never had and never determined upon, under incomplete plans never approved. That character of proof is quite too speculative."

The court in its opinion, quoting from the case of Kent v. Darman previously referred to, stated: "With doctors, lawyers, and other professional men, the element of time is but one of the considerations in fixing the amount of reasonable compensation. Inability to give the exact amount of time expended may be considered by the jury, but does not prevent recovery for the fair value of the services which the evidence shows have been performed. Plaintiff and two other architects called by him as expert witnesses, in giving their opinions as to the reasonable value of plaintiff's services, base their estimates in part on the standard for charges made by the American Institute of Architects. This association is a voluntary organization of many leading architects of the United States. The institute, it appears had published the statement, which was generally accepted by its members and other architects, that a fair minimum charge for the preparation of plans and supervision of erection of the building was 6 percent of the cost price, and if the building was not erected, three-fifths of 6 percent. This rule is not binding even upon members of the association, but it appears that it is a basis which is generally accepted by architects of good standing throughout the United States. In giving their estimates, the expert witnesses stated that they regarded this as one of the elements to be considered in deciding on the amount to be charged in any case. We see no reason why this is not a proper consideration. It is not claimed that defendant, who knew nothing of this custom, was bound thereby, but in arriving at the value of professional services evidence of the customary charge made by members of a profession or occupation in the vicinity where the contract is made is a proper element to be considered in the fixing of the charge."

(1) Rowland et al. v Hudson County, 80 A. 2d 423, Supreme Court of New Jersey, April 30, 1951.

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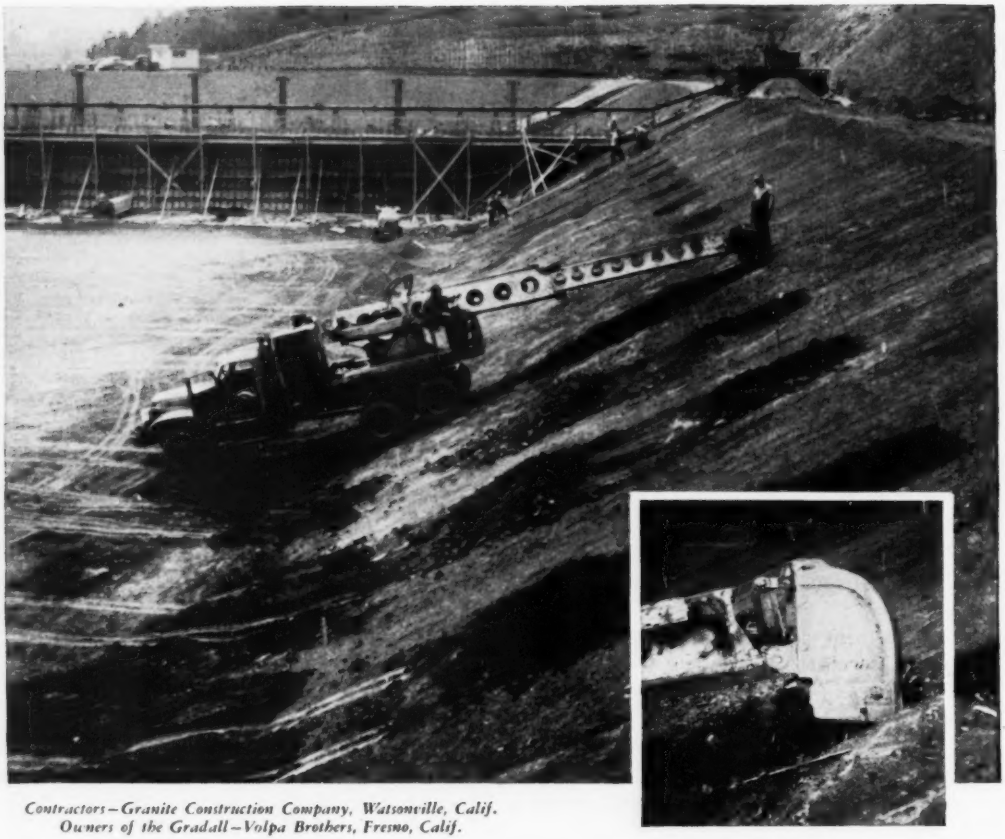

Contractors—Granite Construction Company, Watsonville, Calif.
Owners of the Gradall—Volpa Brothers, Fresno, Calif.

Gradall solves tough excavation problem on San Francisco Reservoir project

THE San Francisco Water Department recently completed a difficult excavation job according to schedule, thanks to the Gradall. In building a 30,200,000 gallon reservoir, it was necessary to excavate for the foundations of over 500 columns which will support a concrete "roof" over the reservoir. This meant that clean, vertical cuts were needed—and more than 100 of the footings were on a 2 to 1 slope of the reservoir's banks.

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Sites for Passamaquoddy Bay dams explored with new sounding tool

INFORMATION that will be of value in any new appraisal of the long discussed Passamaquoddy tidal power scheme on the Maine-New Brunswick border was collected this summer by the U. S. Geological Survey in continuing tests of a Navy sonic sounding device. Results indicate favorable rock foundation conditions for most of the major structures in the proposed development.

Relatively new, the Navy device has this advantage over earlier sonic depth-measuring devices: It measures both the depth to mud bottom and to rock on one continuous sheet of graph paper. It has been used heretofore to determine the thickness and extent of silt deposits in the upper end of Lake Mead (ENR March 23, 1950, p 76) and to explore the site of Chicago's big new filtration plant (ENR Aug. 23, 1951, p 44).

When engineers in the office of the Chief of Engineers learned that the USGS was planning to try the device in coastal waters, they suggested that the tests be made in channels leading from Passamaquoddy Bay to the Bay of Fundy.

If the larger of two tidal power projects proposed for that area ever is built, dams will be needed across these channels, yet little was known about them except the depth to mud. How far it might be to rock, no one knew.

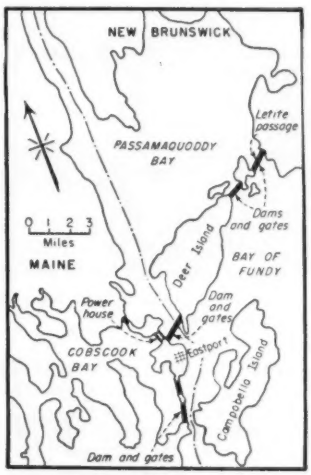
Last year, when the U. S. and Canadian governments asked the International Joint Commission to report on the larger international scheme, the commission reported that the feasibility of closing off those channels with dams would depend on the then unknown foundation conditions in those channels. The commission set the cost of a complete study of the international projects at $3,900,000 (ENR Nov. 30, 1950, p 26).

No such study has been authorized. But the Passamaquoddy tidal power scheme was included in a resources study that President Truman ordered when he set up the New England-New York Inter Agency Committee last October. This committee is to report by July 1 of next year.

• **False start**—In 1935, as part of the nation's recovery program, President Franklin D. Roosevelt ordered the Public Works Administration to start construction of a project long advocated by his friend Dexter P. Cooper to develop power from the tides as they surge in and out of the bays adjoining the Bay of Fundy, where the tides have an extreme range of 27 ft. Lacking an international agreement that would permit use of Passamaquoddy Bay in New Brunswick, the PWA project had to be limited to Cobscook Bay, which is an arm of Passamaquoddy Bay in the northeast tip of Maine.

That restriction hamstrung the project from the start. Two pools and a much larger bay area were needed for any promise of success within reasonable cost limits. The one-pool scheme, using Cobscook Bay, requires auxiliary power substantially duplicating the generators on the tidal-power plant—for use during high and low tide periods each day (ENR April 23, 1936 p 583). This duplication did not make sense; the project was abandoned after a lot of money and more than a year's time had been spent on it.

Nearly $700,000 was spent on surface and subsurface exploration, including core borings in the channels across which rock-fill dams were to be built. The latter revealed deep beds of marine clay below the bottom of the channels. At the deepest point of the projected Eastport Dam, for example, the depth was 117 ft to clay bottom and 264 ft to rock.



THE INTERNATIONAL PLAN for developing power from tides flowing in and out of Passamaquoddy Bay includes both that bay and Cobscook Bay.

• **Savings in time and money**—In speed, cost and results obtained, the new sonic sounding device contrasts most favorably with the exploration done by the Army Engineers in 1935-36 under the difficult conditions that are ever present in the Bay of Fundy off Eastport, Maine. Information comparable to that obtained by the Army Engineers after months of work in the swiftly changing waters around Eastport was obtained by the USGS in two weeks with a much smaller staff in the larger channels farther north. However, good weather and gentle winds favored the latter work.

• **Improved sounding device**—The navy depth-finder operates on the sonar (echo) principle. A "transducer"—comparable to a radio transmitter—is used. It consists essentially of a metal and rubber container with carefully polished crystals. Some of the crystals change outgoing electrical impulses into sound waves that head bottomward. Others—on the receiving end of the transducer—retranslate the returning echoes into electrical impulses which are amplified and made to write the story of their underwater round-trips on a continuous sheet of graph paper.

This continuous record of depths to mud, to glacial debris or other unconsolidated overburden, and finally to rock, is the principal improvement of the new equipment over the familiar fathometer that simply measured the round-trip time of a sonic signal and translated it into depth. With the new depth finder, the continuous story of the bottom layers—down to solid rock—appears on a single strip of paper. (Schools of fish beneath the boat often add a "free-wheeling" layer that can easily be detected by a skilled interpreter. Big beds of seaweed add to the interpretation problem.)

At Eastport, the transducer was slung from a davit over the side of a small coastal freighter, the David C. MacNichol. Six to ten bottom profiles were recorded in each area sur-

DEPTH FINDING EQUIPMENT used in the recent studies shows both the depth to mud and to rock. William O. Smith, head of the survey group, points to the rock line.

SEXTANT READERS and horizontal control operator make repeated determinations of the vessel's position relative to shore points during the soundings.

veyed. In all, the survey crew made 44 profiles showing not only the ocean bottom but the depth through overburden to bedrock at each entrance to Cobscook Bay in Maine and to Passamaquoddy Bay in New Brunswick.

At least once in each area, the ship crossed the parallel courses that it followed in making most of the profiles. The cross-profile gave an additional control check on the data recorded.

Another ready-made check was available in the area cored in 1935-36. The cores in every instance attest the correctness of current interpretive techniques.

Sextant readings taken every 60 sec. from the bridge to shore points furnished horizontal control. Great tidal variations put a premium on vertical control. The ship maintained radio contact with shore points where every 10 min. the height of the tide was read and added to the record. The horizontal and vertical readings are being correlated with the depth profiles in plotting underwater contour maps that USGS is preparing for the Army Engineers.

It is geology associated with the advance of the Great Ice Sheet that most concerns the engineers at Eastport. Thick deposits of clay, sand and gravel were strewn about by glacial action. Offshore ocean currents since that time have been at work on the loose materials; they have built up additional deposits which show up as marine blue clay overlying the glacial till.

But—so far as the Passamaquoddy project is concerned—the profiles show that most of the sediments are in the areas of 1935-36 core drilling, below the border. Those cores reached solid rock in the limited U. S. project area at a much greater depth than earlier superficial surveys had indicated. The additional foundation areas embraced in the international development are relatively free from coverage by mud and other sedimentary materials.

Near the Letite Passage area, the profiles indicated a sizable rock fault —the first known instance of locating an underwater fault with depth-finder equipment. Scientists have long suspected a fault in this region. Seismic data have pointed to the area as a source of great crustal instability. The new evidence shows where large rock formations sheared and slipped in trying to achieve isostatic equilibrium. But the fault zone apparently does not cross the sites of the proposed dams in Letite Passage and in the channels between adjacent islands. Thus the fault would not affect the dam foundations.

William O. Smith, USGS physicist who handled the depth-finding projects at Lake Mead and Chicago, was in charge of the work at Eastport. Gerald G. Parker, senior geologist, heads up the geological phase of the Quoddy research. Herman Kropper of the New England Division, Corps of Engineers, and John Roche, from the office of the Chief of Engineers, cooperated in laying out the scientific program and the plan of sonic soundings.

Col. H. J. Woodbury, who is division engineer at Boston, supervised the work for the Army Engineers.

The sonic testing apparatus used in this test work was built for the Navy by the Edo Corp. of College Point, Long Island, N. Y.

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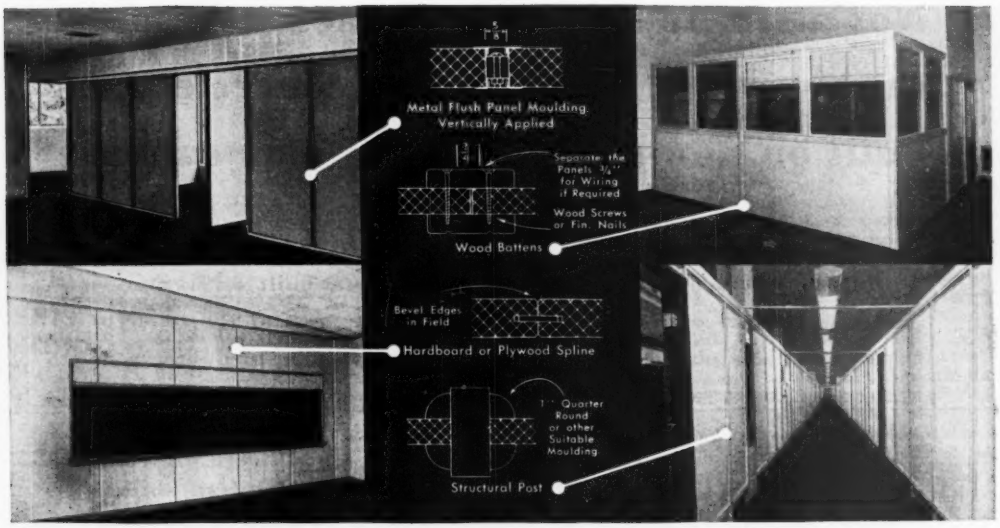
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For nine years the pavement in this test section carried all normal traffic *plus* the heavy wartime traffic. Then for six months the pavement was subjected to accelerated truck traffic equivalent to at least 20 years of normal traffic on this road. Yet the 28 slabs on granular subbase carried 238,000 trips by trucks with single axle loads of 18,000 lb. in one section and 22,400 lb. in another section without any structural cracks. These slabs are in as good condition as when opened to traffic.

Since the Maryland Test Road was built a decade ago there have been many improvements in concrete pavement design and construction. With today's knowledge of soils, highway engineers can determine subgrade bearing values and any tendency of soils to pump. A thin insulating layer of granular material, where needed, will prevent pumping.

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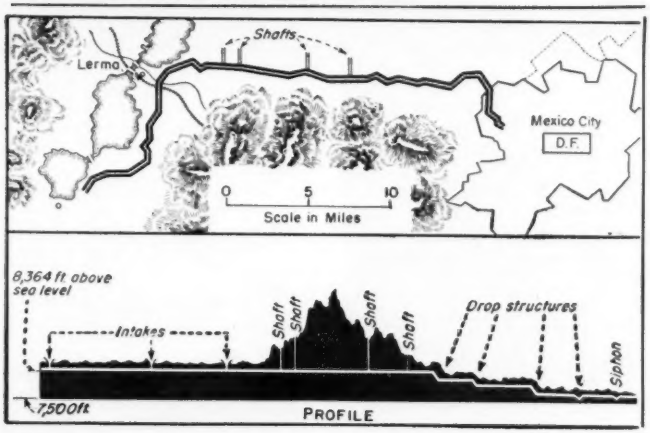
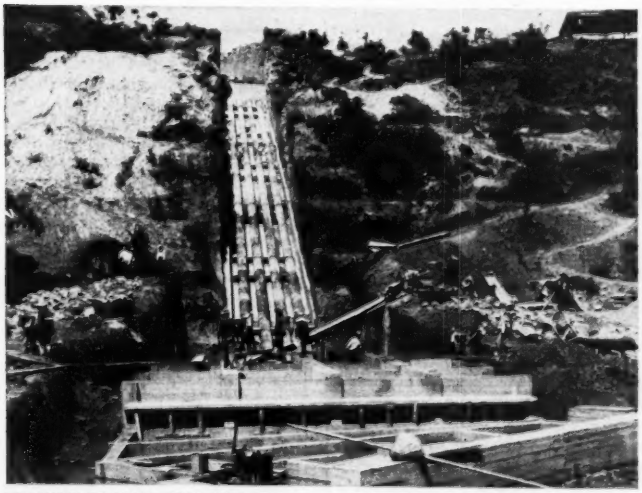


The $25-million Lerma Aqueduct completed by Mexico after 9 years

After nine years of work, the 37-mile Lerma water system which will carry potable water, in the amount of six cubic meters per second, to the Mexican capital has been completed and placed in service. The project, which cost $25 million dollars, has been envisioned by Mexican engineers for over a century. It will bring water from Lerma Lake on the Pacific side of the continental divide through a 9-mile tunnel to Mexico City which rests in a valley on the Gulf slope.

For years, the capital, whose population numbers close to 3,000,000 including outlying suburbs, has suffered under an acute water shortage. Most of the city's mains held water only two or three hours daily during which time it was the custom of city residents to fill up stand tanks on their roofs. Houses without tanks had water only two hours daily.

However, with the addition of 6 cu M per second from the newly opened Lerma project plus 3 cu meters from newly-drilled deep wells near Mexico City, according to water authorities, the city will now have 15 cu m per second of water available which will provide continuous service 22 hours daily.



FUTURE POWER STATION—This is one of four drops that total 1,000 ft as the water comes down into the Valley of Mexico

The Lerma project consists of four main divisions: The Valley of Toluca aqueduct which carries the water from Lerma Lake, by pumping, some 13¾ miles until it comes to the mountain of Las Cruces at the Altarasquillo Gorge. The lift is about one meter.

The Las Cruces Mountain range tunnel, 9 miles long, where a concrete-lined tunnel 10 ft in diameter has been drilled through hard rock from Atarasquillo Gorge to Dos Rios Gorge. The tunnel actually has a capacity of 14 cms (compared with the six it is now carrying), which will allow for future increases. The tunnel was drilled under a range of mountains reaching 14,000 ft high, and was drilled 8,400 ft above sea level.

The Valley of Mexico aqueduct takes the water from the mouth of the tunnel at Dos Rios for a distance of 14 miles to the Dolores storage tanks outside of Mexico City. This aqueduct goes underground at several places. The water then goes into the city distribution chambers for purification.

There are four hydro-electric drops, all on the Mexico City side of the mountain range. They are at San Bartolito, Rio Borracho, Las Palmas and San Joaquin and will furnish 16,900 hp and eventually generate 16,000 kw of power. The water drops some 1,000 ft in those four stations.

The main tunnel, running 9 miles, is one of the longest in Mexico. It was holed through on Aug 25, 1948, and was lined with concrete by a concrete gun that had a 200 hp injection rate.

The tunnel, circular in shape, has a slope of 67 centimeters per kilometer. It was necessary to sink four ventilation shafts from several thousand feet above in order to provide a needed 45,000 cu ft of air for workers during construction.

Altogether, the project comprises 17 tunnels, though none of the others are anywhere near as large as the main Atarasquillo-Dos Rios tunnel.

Since the early days of Mexican independence, engineers have considered the Lerma project, but it was thought to be infeasible in view of the mountain range involved. But about 20 years ago the government decided to study the potentialities more closely.

Projects were drafted and killed and for a while it seemed impossible to find the proper solution of the problem of conducting the waters of Lerma to Mexico City. Finally, under Edu-

(*Continued on page 48*)

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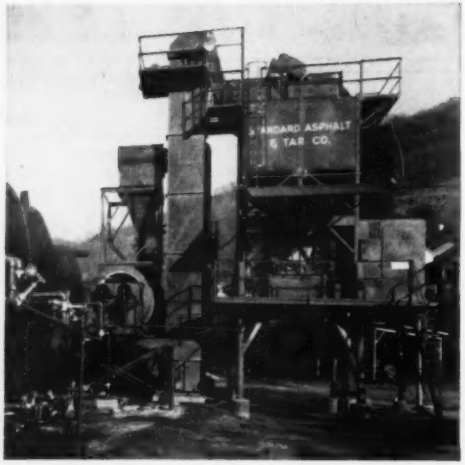

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ardo Molina, head engineer, the final blueprints were drawn, and work was started in 1942. Nine years and eight months later, it was finished and the water is now flowing through the mains of Mexico City.

A highway was built parallel to the project, and this road is now considered one of the most scenic in Mexico.

Although new city mains were laid to carry the potable water from Lerma, and a modern chlorine system placed in use, the residents of the city still do not consider the water drinkable.

The reason for this is that Mexico City lies upon an old lake bed and underneath the entire city there is a level of water called "aguas negras" or swamp water. Lacking good city drainage, this level is polluted and its water tends to make its way into the distribution mains. Some reports said new concrete distribution piping laid only this year has either cracked or parted under pressure from the new system, thus allowing the seepage water to enter.

EDUARDO MOLINA, chief engineer of the project, with, right, Diego Rivera, famous muralist, who decorated the distribution chamber with a 40-ft mural depicting the Aztec goddess of water.

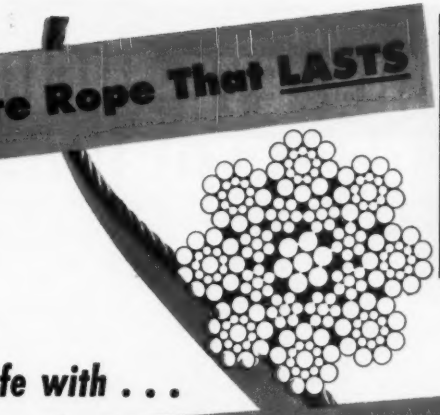
It would appear that, while the Lerma project has been well completed, according to engineering observers, the city of Mexico still will have to relay the distribution system within the city limits completely in order at last to deliver again potable water to the residents. The word "again" is used advisedly as 400 years ago the Aztecs had an open aqueduct that brought spring water into the city. The Aztecs were conquered by Cortes in 1521 but there still are some of their descendants near Mexico City.

Here's a Wire Rope That LASTS

J&L STEEL

Operators Get Longer Service Life with . . .

J&L CenterFit WIRE ROPE

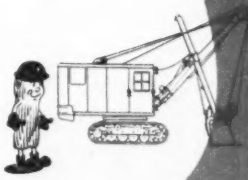


If you're responsible for the wire rope on clamshells, shovels or any other earthmoving equipment that operates on small diameter sheaves and drums, J&L CenterFit Wire Rope can help you save money.

CenterFit, produced exclusively by Jones & Laughlin Steel Corporation, has a unique design engineered to give you more steel and fewer voids than conventional wire rope. All strands run in the same direction with outside strands fitting snugly into the valleys between inside strands. The result—greater strength . . . easier handling . . . which means longer service life.

In addition J&L CenterFit is lubricated with BRONZ-LUBE, the exclusive J&L lubricant with high film strength that prevents squeezing out between the strands. BRONZ-LUBE contains fine flakes of soft bearing metal that provide a smooth wear-resistant surface for every wire—forms a close adherent coating that doesn't drip off unless subjected to extremely high temperatures.

Users' records prove that J&L CenterFit lubricated with BRONZ-LUBE reduces operating costs, diminishes downtime and increases profits when used in the applications for which it was designed.



AND HERE'S HOW YOU CAN FIND OUT MORE ABOUT CENTERFIT WIRE ROPE!

Just write to Jones & Laughlin Steel Corporation, 428 Jones & Laughlin Building, Pittsburgh 30, Pa., and ask for a free copy of our booklet, "CenterFit." It gives you detailed information on the construction and applications of this exclusive J&L wire rope and tells how others are saving money through its use.

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From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY (*hi-tensile steels*).

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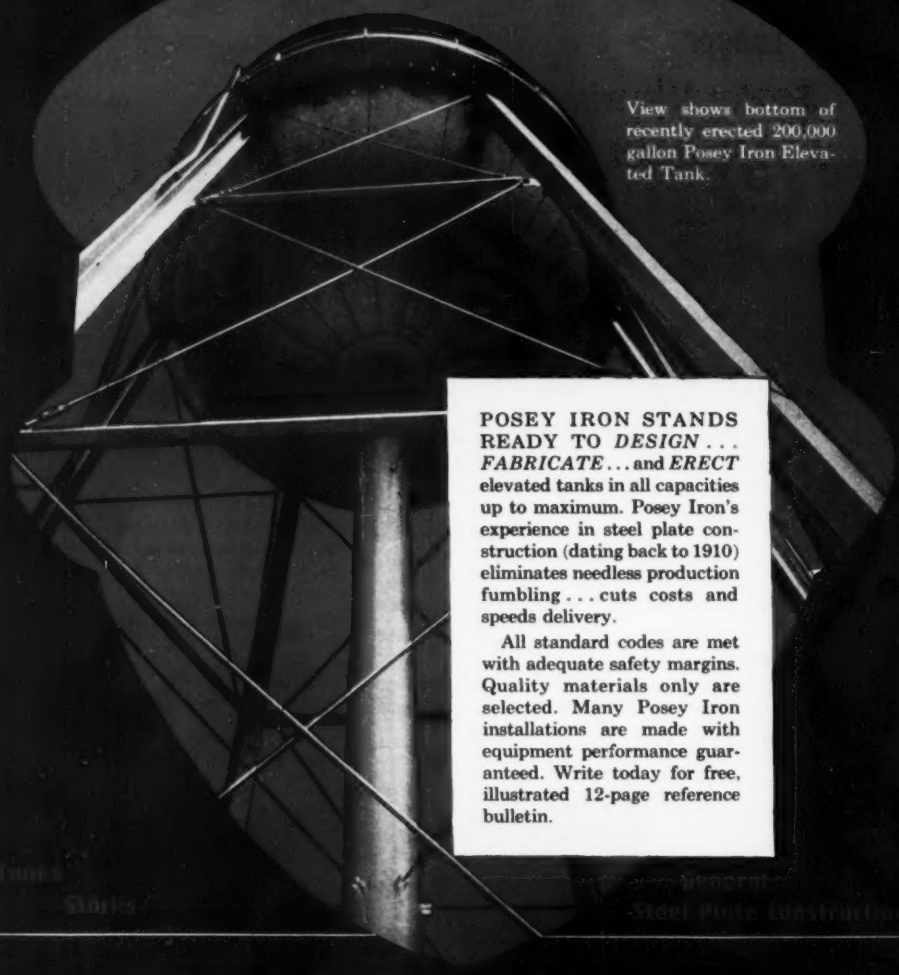
WORMS EYE VIEW OF SAFE STORAGE



View shows bottom of recently erected 200,000 gallon Posey Iron Elevated Tank.

POSEY IRON STANDS READY TO *DESIGN*... *FABRICATE*... and *ERECT* elevated tanks in all capacities up to maximum. Posey Iron's experience in steel plate construction (dating back to 1910) eliminates needless production fumbling... cuts costs and speeds delivery.

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MUNICIPAL

CAMDEN APPROACH—This is the site where improvements are to be made including 22 new toll booths.

To spend $2,000,000 on new approach to Philadelphia-Camden bridge

Having completed the major step—adding two traffic lanes to the bridge itself—the Delaware River Joint Commission is now pushing a $2,000,000 project on the Camden plaza of the Camden-Philadelphia Bridge.

Addition of the two new lanes was completed some months ago by paving the lanes left open for future trolley tracks when the bridge was opened in 1926. The tracks were never put down, and elimination of the grillwork laid down as a safety measure originally now provides eight traffic lanes on the structure.

Work now in progress will include:

Clearing a two square block area on the Camden approach to make room for 22 new toll booths to replace the 12 now in operation; construction of a two-story reinforced concrete police building on the northwest corner of the plaza, and a two-story reinforced concrete addition to the commission's headquarters building, also on the North side.

Daniel M. Cramer, chief engineer for the commission, pointed out that the bridge is now carrying the enormous volume of more than 23,348,000 vehicles per year (compared with 16,000,000 for the Holland Tunnel) and that the current improvements—including the long-in-progress Vine St. widening in Philadelphia—are necessary to move the traffic on to and away from the structure. He added that engineers now believe the bridge has reached very close to its maximum capacity—a belief which has already spurred surveys (ENR Jan. 13, 1949, p. 14) looking towards construction of a second bridge crossing.

The new toll booths will be set in an arc, slightly east of the present location. Twelve of the booths will be "reversible"—collecting tolls on either side; 10 will collect on one side only.

Orange County, Calif., increases water level

Approval by the Metropolitan Water District of Southern California of the sale of 25,000 acre ft of water to the Orange County, Calif., Municipal Water District assures continuation of the county's sinking of water to increase the underground water level. The Colorado River water will flow into the Santa Ana River stream bed near Arlington and percolate into the basin.

MWD directors set the price at $10 per acre ft, providing that the Orange County District approves a current annexation movement to join the MWD. The district will vote in November on the question of joining the MWD. The annexation will bring almost all of Orange County into the MWD. Two new feeder lines costing $13,000,000 will be built, one for untreated water entering the county near Santiago Dam and the other, terminating near Buena Park, for filtered and softened water for domestic use.

If the annexation is approved, a total tax rate of 60.6¢ per $100 as-

(Continued on page 52)

Cure for a Dirty Shakedown

Twice each day it was necessary for a large Eastern steel producer* to shakedown his furnaces. This caused high concentrations of dirt which resulted in severe air filter maintenance and inefficient air conditioning.

FARR Company, when called upon for a permanent solution, recommended a FAR-AIR** Self-Washing Filter. This proposal was followed and an installation made. After two years of use, the results are very satisfactory and another FAR-AIR unit has been installed in the same plant.

The unit was set to automatically wash and re-oil itself just prior to the time that the furnaces were shaken down. Thus, maintenance was virtually eliminated and the filters were always at peak efficiency.

FAR-AIR Self-Washing Filters can be furnished to handle any CFM requirement. If you have a special air filtration problem, Farr engineers will help you find the proper solution. Write for complete information to Farr Company, P.O. Box 10187 Airport Station, Los Angeles 45, Calif.

*Name furnished on request.
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Municipal . . .

sessed valuation will be necessary to finance it. The regular MWD assessment is 30¢, and an additional 27¢ will be levied for the 30-year payment of the prorated bonded debt of $20,064,000. The remaining 3.6¢ will pay operating expenses of the new district.

Widening of lift bridge sought by Buffalo

Court action will be undertaken by Buffalo, N. Y., this fall to compel the Pennsylvania Railroad and the Hanna Furnace Corp. to reconstruct and widen the lift bridge which carries Fuhrmann Boulevard over the privately-owned Union Ship Canal, Corporation Counsel Fred C. Maloney has disclosed.

Unless the two companies, co-owners of the 45-year-old span, agree to the project, said Maloney, it is likely the case will be tried during the fall equity term of Supreme Court.

The suit stems from the multi-million dollar high level bridge project which proposes to carry high speed traffic over the Buffalo River from the foot of Main St. to Fuhrmann Boulevard.

City officials contend that the high-level span will be worthless since it will only speed a heavy volume of traffic to a "definite bottleneck" at the narrow lift bridge, which now accommodates two lanes of traffic, one in each direction.

"Even if the high-level bridge were not being built," said Maloney, "it would be imperative that the lift bridge be widened to accommodate increased traffic.

The city is proceeding on an agreement made in 1904 between the Pennsylvania and the Buffalo & Susquehanna Railroad Co. and a later arrangement, known as the Hamburg Turnpike agreement signed in 1910 and in which the city was a participant.

The 1904 agreement provided that the bridge be maintained in good and safe condition with such alterations, repairs and additions as may be necessary.

Municipal briefs

• **The law's delays**—Almost all the residents of Munroe Falls, Ohio, including those who fought the $190,000 water system through three courts, have signed up for city water, now that the work is finally under way. The village will get its water from nearby Cuyahoga Falls, and has

(*Continued on page 55*)

Raymond MAKES 5 TYPES OF CONCRETE PILES

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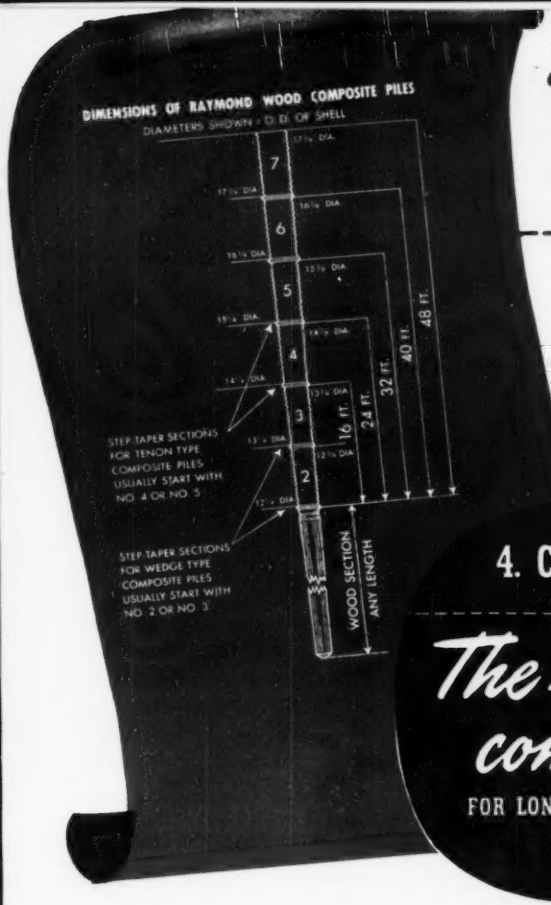
3. PIPE STEP-TAPER . . . 4. COMPOSITE
5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations; waterfront construction and harbor and river improvements; shipbuilding facilities; also cement-mortar lining of water, oil, gas and chemical pipelines, 4" to 144" diam's., by Cantriline Corp., a Raymond subsidiary.

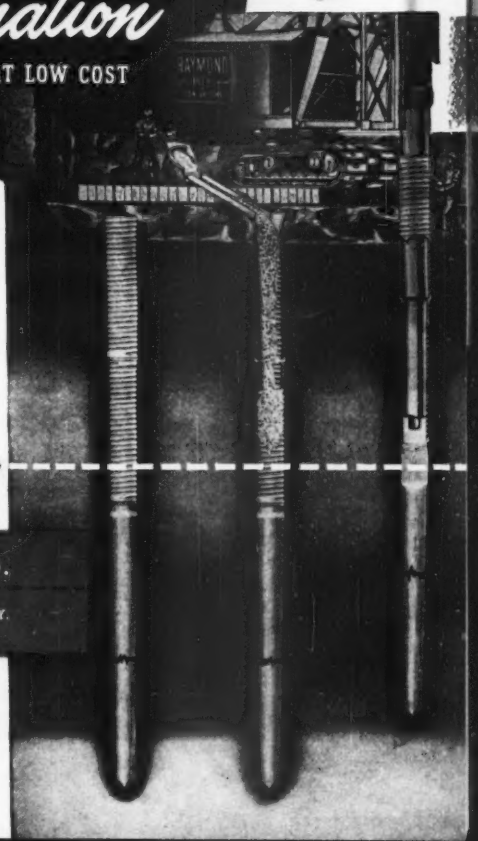


4. COMPOSITE PILES

The right combination

FOR LONG LENGTH AT LOW COST

Right, driven wood pile is being followed down by pile shell of concrete section. Center, complete pile driven to resistance, pile shell is being filled with concrete. Joint, wedge-type with sealing ring, is below ground-water level. Completed pile is shown at left.



Raymond Composite Piles are used for economy and long length. The concrete upper section extends from the permanent water table up to the underside of the footing, thus eliminating the expensive excavation, sheeting and pumping often required with wood piles.

Raymond Composite Piles have solved many deep foundation problems permanently and at minimum final cost. We shall be glad to advise you, without obligation, whether they are suitable for your project.

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GENERAL H. C. T.

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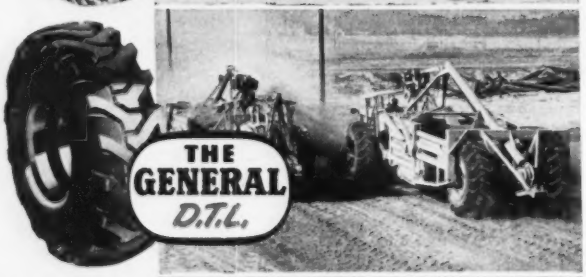

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Municipal . . .

awarded contracts for pipelines, a storage tank, meters, and a booster station. A taxpayer's suit delayed the work for a year, adding more than $25,000 to the cost of the project. This included the expense of litigation, increased cost of the contract and materials, and rising bond market interest rates. On the brighter side, villagers will get a reduction of about 45% in insurance rates as soon as water is turned on.

• **Condemnation proceedings**—Seattle, Wash., may condemn private property without holding public hearings, Superior Judge Frank D. James has ruled in a suit filed by Samuel Minsk. The decision clears the way for the city to acquire a five-acre site at Alki Point for a $600,000 sewage disposal plant. Minsk contended the city cannot condemn private property without public hearing.

• **Civic center proposed**—The development of a civic center along the St. Johns River waterfront in Jacksonville, Fla., will be the subject of an early conference between the Duval Board of County Commissioners and the Jacksonville City Commission. The county commissioners have chosen a site at Liberty and Church Streets, on the outskirts of the downtown business area, for a county courthouse. Many citizens have objected to that site as inconvenient and not fitting in with a city plan for eventual development of the waterfront as a civic center and large automobile parking area. A new city hall is included in the tentative plans for water front improvement. City planners envisage a total eventual expenditure of $35,000,000 for the civic center.

• **Seattle civic problems**—A planning firm is expected to be retained shortly to make a survey of three immediate civic problems at Seattle, Wash.—a new union railroad passenger station, a plan for speeding downtown traffic, and a plan to provide adequate off-street parking.

The federal government wants to build a terminal postoffice on the site of the present railroad station. The municipal government proposed establishment of one-way streets to speed traffic through the business district but the Chamber of Commerce opposed this move. An alternative is sought. The city would have been authorized to provide off-street parking in legislation before the state legislature earlier this year but owners of parking facilities were able to kill this plan. An independent survey now is desired.

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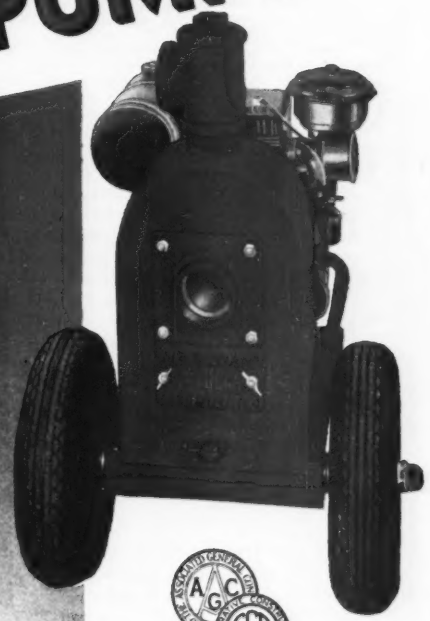

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Reinforced
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MEETINGS

George E. Miller of Omaha has been elected president of the newly-founded Nebraska Society of Professional Engineers. Other officers are Hayes A. Lyle, vice-president; Max E. Kiburz, secretary; Henry A. Sikso, treasurer; and Edward T. Foster, national director. Directors are B. H. Backlund, J. K. Burns, C. A. Goth, R. E. Kirkman and L. I. Pentzien, all of Omaha, and M. E. Norlin of Lincoln.

Pecos H. Calahan has been appointed executive secretary of Bay Counties Civil Engineers and Land Surveyors Assn., Inc., Oakland, Calif. Calahan is also present secretary of the California Legislative Council of Engineering Organizations.

Richard A. Haber, chief engineer of the Delaware State Highway Department; John A. Perkins, president of the University of Delaware; Clayton M. Hoff, executive vice-president of the Brandywine Valley Association; Daniel F. Shields, Jr., and John J. Conway has been appointed to serve on the first Delaware Geological Survey Commission by Governor Elbert N. Carvel.

Engineering, chemical and power concerns in three metropolitan areas recently sent representatives to Idaho Falls to meet with officials of the Idaho Operations Office, U. S. Atomic Energy Commission. They studied the possibilities of civilian building and operation of reactors to produce fissionable materials and power. A report to the AEC will be drawn by representatives of Chicago, Detroit, St. Louis and San Francisco business and industry. Economic factors and preliminary research needs will be taken into consideration. Costs of the study, to last a maximum of 12 months, are being borne by industry, except costs to the AEC and its contractors incidental to make information and services available.

Earl A. Burt, Los Angeles, has been elected president, Arthur L. Kiefer, Sacramento, vice-president, and Joseph H. Mack, San Diego, secretary-treasurer, of the County Engineers Association of California Tom Ogilvie, Lassen County, was also named to the board of directors.

Russel Wright, New York industrial designer, elected president of the Society of Industrial Designers for 1951–52 to succeed Dave Chapman, Chicago designer. Other officers elected were Carl Bjorncrantz of Chicago, vice-president; Jean O. Reinecke of Chicago, secretary; and A. Baker Barnhart of New York, treasurer.

Thos. C. Keefer has been made field secretary of the Association of Professional Engineers of Ontario.

Col. H. G. Thompson is assistant general secretary of the Engineering Institute of Canada.

Frank T. Magennis is chairman of the board of directors of the International Road Federation, American region. He is vice-president of the Goodyear Tire and Rubber Export Co., and succeeds B. C. Budd, vice-president of the Packard Motor Car Co.

George Miller is president of the Nebraska Society of Professional Engineers. Other new officers are Hayes A. Lyle, vice-president; Max E. Kiburz, secretary; Henry A. Sikso, treasurer; and Edward T. Foster, national director. The directors are: B. H. Backlund, J. K. Burns, C. A. Goth, R. E. Kirkman and L. I. Pentzien, all of Omaha, and M. E. Norlin, Lincoln.

Warren A. Coolidge, director of the Department of Public Works of Nashville, Tenn., has been reelected Southern Area vice-president of the American Public Works Association. He is completing his first two-year term as vice president.

Jules P. Channing has been elected president of the Miami chapter of the Florida Society of Professional Engineers; L. W. Cutler, vice-president; H. S. Saffir, secretary-treasurer.

CALENDAR

Florida Sewage and Industrial Wastes Association and Florida section A.W.W.A. Princess Issena Hotel, Daytona Beach, Fla., Oct. 28-31.

Structural Clay Products Institute, Greenbrier Hotel, White Sulphur Springs, W. Va., Oct. 29-31.

American Concrete Institute, regional Sheraton Hotel, St. Louis, Mo., Oct. 30-31.

Canadian Good Roads Association, annual convention, Royal York Hotel, Toronto, Nov. 1-3.

American Public Health Association, annual meeting Civic Auditorium, San Francisco, Calif., Oct. 29-Nov. 2.

Conference on Coastal Engineering, Rice Hotel, Houston, Tex., Nov. 7-10.

National Conference on Industrial Hydraulics, Sherman Hotel, Chicago, Nov. 8-9.

Conference on Atomic Installation in Buildings, Building Research Advisory Board, National Academy of Science auditorium, Washington, D. C., Nov. 27-28.

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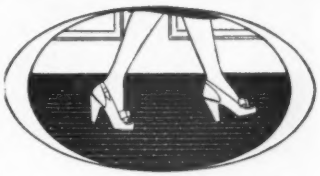

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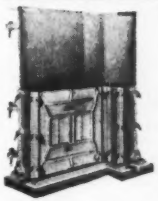

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MEN AND JOBS

BLUEPRINTS STUDIED—Blueprints for the recently completed San Francisco North Point sewage treatment plant are given a final once-over by Sherman P. Duckel, left, director of Public Works, Benjamin Benas, senior engineer, center, and Ralph G. Wadsworth, city engineer.—San Francisco Examiner Photo.

New Appointments

Highway Departments

Robert C. George, member of the Washington state highway department's engineering staff in the Okanogan district office, has been appointed superintendent of Division No. 3, succeeding Carlos Ridge, resigned. He will have charge of 400 miles of highways in Okanogan, Douglas and Ferry counties.

John J. Forrer is now an assistant chief engineer, Virginia highways; **Howard H. Harris** is maintenance engineer; **W. S. G. Britton,** assistant maintenance engineer; and W. C. La Baugh, Jr., resident engineer at Bowling Green.

Alfred G. Kinne, engineer of design, Nevada highways, succeeding George Egan, now with the Western Highway Institute. James D. Wallace, Jr., becomes right-of-way engineer.

Dean L. Beauregard, former assistant division engineer at Newcomerstown, Ohio, has been named acting division engineer.

State, City and County

Robert Mounsey has been appointed water superintendent at Lawrence, Kan.

Floyd W. Usher has been appointed city engineer of Watertown, Wis.

Fred S. Price, secretary-engineer of the New Castle County, Del., Regional Planning Commission, will serve as engineer consultant for the new New Castle County Zoning Commission.

Matthew D. Sullivan has been appointed superintendent and sanitary engineer of the Fall River, Mass., water department. He had been acting superintendent.

Fletcher S. Thomas has been appointed minister of the Department of Public Works in Ontario.

Chester Murray has been appointed acting city engineer at Wenatchee, Wash., succeeding James Dunstan. He has been employed in the department as an assistant.

Miles W. Weaver, of Los Angeles, Calif., a graduate of Clark University, Worcester, Mass., has been appointed to the Portland, Me., city planning board.

W. T. Cox, city engineer and superintendent of public works at Asheboro, taking over the duties of Clifford Pace, on leave.

Industrial and commercial

Robert M. Haynie, formerly with Swinerton & Walberg, has become a general partner in the Haas Construction Co., San Francisco, Edward Thompson Haas, president. Leo S. Gosliner, chief estimator for Haas & Rothschild, has gone with the Hass organization.

Harold T. Newton, former assistant chief engineer of the Morrison-Knudsen Co., has been elected a vice-president of the J. A. Jones Construction Co., Charlotte, N. C., in charge of its branch office at Seattle, Wash.

Col. E. P. Ketchum, Corps of Engineers, U. S. Army, retired after 34 years of service, has been elected vice-president of the Mount Vernon Contracting Corp., 439 North Terrace Avenue, Mount Vernon, N. Y. His last military assignment was district engineer of the New York District.

Samuel S. Grossman, has been appointed director of employee and public relations for Theodore J. Kauffeld, consulting engineer, and his associated Devenco Incorporated, at 150 Broadway, New York, N. Y.

C. A. Colpitts is assistant chief engineer of the Canadian Pacific Railway. **J. E. Armstrong** is engineer of track.

Bureau of Reclamation

J. P. Jones has been appointed acting regional engineer of Region 3 at Boulder City, Nev. With the bureau for some 20 years, he served for the last six years as assistant to C. A. Bissell, regional engineer, now retiring.

Engineer Robert R. Williams is on his way to Monrovia, Liberia, to investigate possible hydro-electric sites on the St. Paul River. He is on a one-year Point Four assignment.

Consulting engineers

The New York City consulting engineering firm of Knappen Tippetts Abbett Engineering Co. has changed its name to Knappen-Tippetts-Ablett-McCarthy, and has admitted **Brig. Gen. James H. Stratton** (USA Ret) to Partnership. Present partners are: **Ernest F. Tippetts, Robert W. Abbett, Gerald T. McCarthy, William Z. Lidicker** and **Gen. Stratton.**

Thompson & Lichtner Co., Inc., consulting engineers of Boston, has elected **Charles E. MacKinnon,** treasurer; **Henry A. Marbach,** vice-president in charge of engineering; Benjamin A. Leesky, vice-president.

Marvin O. Kruse has taken over the private consulting practice of **Leon L. Schoel & Associates,** Spencer, Iowa, under the name of Kruse Engineering Service.

Resignations

Dawson Smith has resigned as divisional engineer at New Philadelphia, Ohio highways.

Richard Moffitt has resigned as city engineer, Mt. Vernon, Ohio, to become city engineer at Newark, Ohio.

Alan Kolb, senior sanitary engineer of the South Carolina Board of Health, has resigned to go with the U. S. Navy as sanitary engineer and is located in Charleston, S. C. He is secretary-treasurer of the Southeastern Section of AWWA.

J. C. Harper, Lawrence, Kan., city engineer for 10 years, has resigned to go with the Bechtel Engineering Corp., contractor for the Westvaco Corp.'s $3,500,000 plant.

(Continued on page 60)

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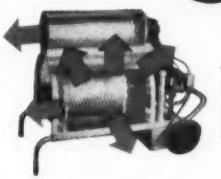

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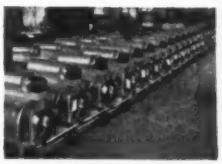

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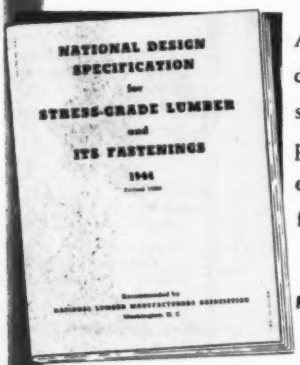

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ENR

MEN AND JOBS...

Retirements

Cantwell Clark, manager of the planning section of the DuPont Company's nylon division, has retired after 36 years service with the company. He received the degree of bachelor of science in civil engineering in 1910 from the University of Delaware. He joined DuPont in July, 1915 as an assistant engineer in the Engineering Department at the Barksdale, Wis., commercial explosives plant.

Alvah Small, civil engineer, vice-chairman of Underwriters' Laboratories, Inc., has retired after 45 years.

Honors

Two Public Health Service officers, **Miss Pearl McIver** and **Dr. H. E. Hilleboe** were presented with Outstanding Achievements Awards by the University of Minnesota recently. Miss McIver is chief of the division of Public Health Nursing, and Dr. Hilleboe, on leave from the PHS, is New York State Commissioner of Health.

Edward A. Dent, just retired as assessor for the District of Columbia, was presented with a certificate of merit by the District Commissioners.

Lieut. Chas. B. Coyer, CEC, USN, has won the 1951 award of the Chief of the Bureau of Yards and Docks. The award and $100 cash are given for the best technical paper by an officer about some aspect of CEC work. His paper was on "A Multipurpose Wave Generator."

Howard E. Moses, of Harrisburg, chief consulting engineer, Bureau of Sanitary Engineering, Pennsylvania Department of Health, a veteran of 43 years service with the department, received the Charles Alvin Emerson Award for outstanding service to the National Federation of Sewage and Industrial Wastes Associations.

RIBBON CUTTING—Participating in ribbon-cutting ceremonies honoring a highway improvement project in Sacramento, Calif., is Frank B. Durkee, acting state director of public works, center. Assisting him are James R. Garlick, Sacramento County supervisor, left, and Bert E. Geisreiter, mayor of Sacramento.

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EDUCATION, RESEARCH

Colorado rain-making investigation winds up with inconclusive results

Colorado A. & M. College engineers, in a preliminary report on artificial rainmaking activities in northern Colorado (ENR June 7, p. 62), have found "no apparent increase in precipitation" in the test area during the March 1 to June 1, 1951, period surveyed.

The study was authorized by a contract between the Colorado Agricultural Research Foundation of Colorado A. & M. College, through the Civil Engineering Section of the Experiment Station, and the Northern Colorado Natural Resources Association. It emphasized that despite the preliminary findings "there is no proof that possible good results cannot be brought about by artificial cloud seeding."

The analysis of climatological data for March 1 to June 1, 1951, covered a period of cloud-seeding operations by the Water Resources Development Corp. of Denver, a firm engaged in artificial rainmaking. The target area was roughly defined as the valleys of the Cache la Poudre, Big Thompson and St. Vrain rivers, east of the Continental Divide.

According to the evalution, average precipitation in the target area for the 1951 three-month period was 1.04 in. less than the 40-year normal. The report added that the 4.36 in. of precipitation which fell on the target area this year has been equaled or exceeded about two years out of every three for the last 40 years. Possible presence of a wet cycle was seen in evaluation of climatological data, indicating a significant upward trend in precipitation.

In recognizing future possibilities of artificial rainmaking, the Colorado A. & M. evaluation reported that extensive field experimentation over a period of years, under conditions that permit scientifically adequate observation, will be required to establish the degree of success which cloud seeding operations may be expected to achieve.

Target area snow water content for the period of March and April, 1951, was 4.9 in. as compared with a 13-year average of 3.1 in., the evaluation revealed. However, it continued, the above-normal water content increase for the period was apparently the result of the below-normal monthly temperatures which reduced the snow melt.

In presenting a map of western United States showing comparative percentages of rainfall, Colorado A. & M. engineers had "no comment" on what they said appeared to be a general pattern of more-than-normal rainfall in areas not seeded.

One of the advantages claimed for cloud seeding is that it causes the rainfall to be more evenly distributed over an area. The Colorado A. & M. report did not give a detailed evaluation of any change in rainfall patterns resulting from cloud seeding; however, a visual comparison indicated no significant improvement.

The report emphasized the need for more research in the field of artificial nucleation to explain the dry spring period under seeding for the northern Colorado area. It noted that the cloud seeding firm's forecasts for March, April and May, 1951, predicted above-normal precipitation for the area. The U. S. Weather Bureau forecasts were in agreement.

Although great potentialities were seen in the science of increasing precipitation, the report said "there is no agreement at all at the present time among outstanding meteorologists that economically significant changes can be brought about."

The report pointed to the need for "tracking" storms to determine where the moisture falls and whether precipitation in one area robs any other area along the storm path. It also suggested a fairer type of contract for the precipitation purchaser during the uncertain stages of development of the rainmaking science. Such a contract would include a performance requirement.

T. H. Evans, dean of the Colorado A. & M. School of Engineering, advised on direction of the research work, assisted in analysis of the results, and presented the report. Sol D. Resnick, assistant civil engineer for the Experiment Station, headed the project.

APPRECIATION—Harold K. Work, left, director of the research division, New York University College of Engineering, looks on as Dean Thorndike Saville, right, accepts, on behalf of the college, a certificate of appreciation from Prof. Arthur Winterbottom, Department of Physical Metallurgy, Norway Institute of Technology, when a group of 30 World Metallurgical Congress visitors inspected NYU's research projects. The certificate carries the signatures of representatives from 12 foreign countries attending the congress in Detroit, sponsored by the American Society for Metals in cooperation with the Economic Cooperation Administration.

Industrial wastes research gets industry support

An unrestricted grant of $7,500 by the Republic Steel Corp. will help support research studies of industrial wastes disposal at Ohio State University (ENR July 12, p. 39).

The scientific investigations will be conducted at a pilot plant now under construction on the east bank of the Olentangy River.

Development of new industrial processes in recent years has brought new problems of waste disposal which make this work of considerable importance, according to Charles E. MacQuigg, dean of Ohio State's college of engineering, and director of the engineering experiment station.

The Ohio Legislature has authorized the studies and has allocated $100,000 to the state Water Resources Board for the research to be done by the experiment station.

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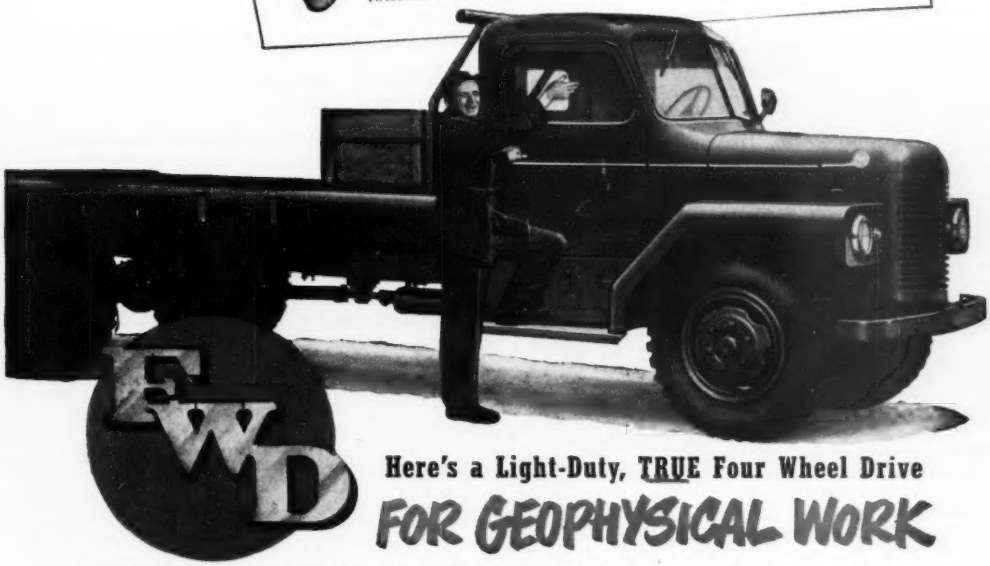

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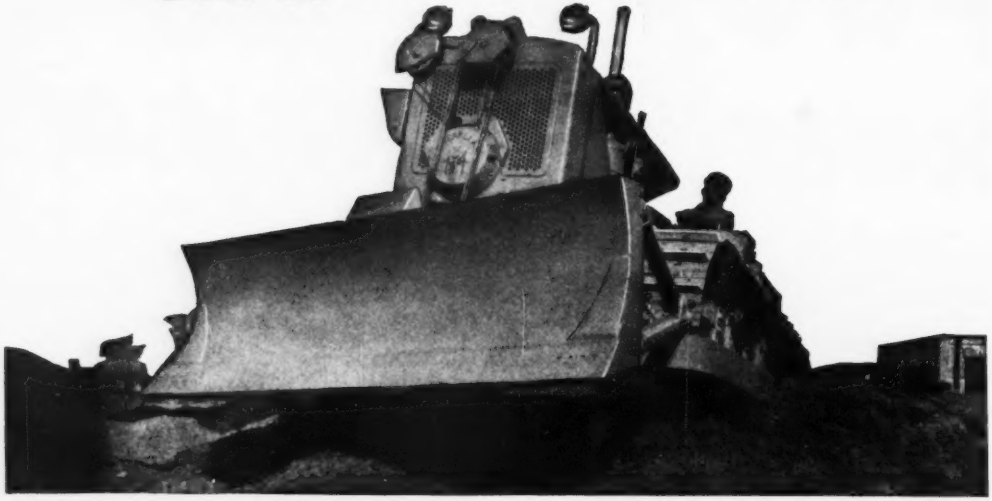

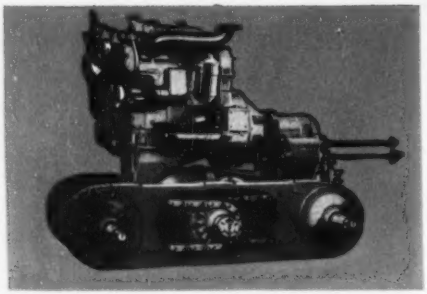

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OBITUARY

Meyer Hirschthal, 72, concrete engineer with the Delaware, Lackawanna and Western R.R. for 44 years, before his retirement Dec. 31, 1949, died in New York Oct. 15. He was graduated in 1899 from the College of the City of New York and received an engineering degree at Columbia in 1902. Among the many works designed by Mr. Hirschthal were the Veterans' Memorial Bridge in Rochester, N. Y., which has a 300-ft span; the Delaware River Viaduct and the Tunkhannock Viaduct on the railroad between Scranton, Pa., and Binghamton, N. Y. The viaduct is 2,700 ft long. He was a special lecturer on engineering subjects at Columbia, and director of the American Concrete Institute.

Samuel J. Ott, 73, a retired civil engineer, died at Rutherford, N. J., recently. He was graduated from Delaware College in 1901 and began work at Edge Moor Plant of American Bridge Co. In 1904 he was transferred to the New York office. He was engineer in charge of bridge estimating and design from 1913 to 1936, then division engineer, New York, until retirement in April, 1945.

Henry G. Livesay, 70, a civil engineer for the Louisville & Nashville Railroad for 35 years, died Oct. 8. Before going to Louisville, he was professor of civil engineering at the University of Texas. He was a graduate of Lehigh University.

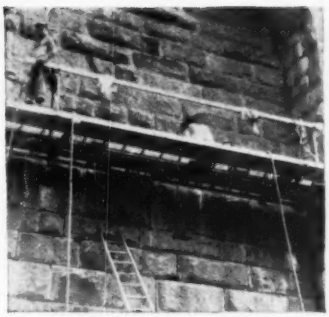
Alfred Vaksdal, 65, director of new plant construction in Danville, Ky. for the Corning Glass Co., died in Danville, Oct. 9.

William Silson Sanderson, 86, who was a building supervisor in San Francisco, Calif., at the time of the earthquake and fire in 1906, and who was active in the rebuilding of the city, died Oct. 5 in Mathews, Va.

Adam Thomas, 75, Fremont, Ohio, sewer contractor for more than 50 years, died Oct. 8.

Samuel H. Haverstick, 81, for 12 years executive secretary of the Trenton, N. J., Housing Authority, died Oct. 10. He formerly was a member of the New Jersey State Highway Commission.

Karl Lane, 49, civil engineer and former superintendent of construction for the Kentucky highway department, died at Ashland, Oct. 10.



STONE R. R. VIADUCT REPAIRED WITH "GUNITE"

The above photographs show a large stone viaduct belonging to an eastern Railroad. This structure, built in 1888, was originally designed for a single track, but was later changed to accommodate double tracks. Increase locomotive weights and power caused the mortar in the joints to chink out due to vibration. Cement Gun crews made the viaduct "as good as new" by repointing the joints, and grouting one of the arches over the Highway.

This job of repointing the masonry joints and the grouting was accomplished by using the "CEMENT GUN" nozzle for filling the joints.

Many other instances of repair, remodeling and new construction with "GUNITE" are described and pictured in Bulletin A2400. A request, on your letterhead, will bring a free copy by return mail.

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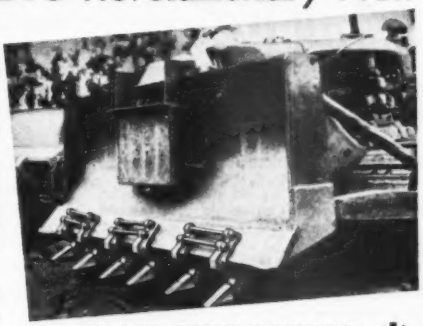

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LABOR

Legal actions against unions top news

Two legal actions taken by contractors against labor unions—one of which resulted in award of damages against the union—topped labor news across the U. S. last week.

A growing list of strikes—most of them over pay matters, and most traceable to demands for adjustments to cost of living; and labor's sharp comments on a proposed state project in Nebraska, also made news.

• **Damages**—In one of the first actions of its kind to reach a decision, a county court jury at Columbia City, Indiana, awarded damages to a contractor who sued a labor union for "conspiracy in restraint of trade."

Damages of $21,000 were awarded to Builders Concrete, Inc., Muncie, in an action against Local 1112, International Hod Carriers' Union. The case was tried in Columbia City on a change of venue from Allen County (Ft. Wayne).

The company had charged conspiracy to damage, claiming the union attempted to force payment of a higher hourly rate for laborers who handled ready-mix concrete than that paid in job-mixing operations. The rate demanded was $1.75 an hour to handle ready-mix concrete, while the rate for laborers on other types of concrete was $1.40.

The second legal action, saw charges of secondary boycott filed with the National Labor Relations Board by Petrillo Brothers, of Wilmington, Del., also suppliers of ready-mixed concrete. The firm, working on contracts on Wilmington's new $20 million Merchandise Mart, said the AFL Building and Construction Trades Council of Wilmington was trying to force other contractors to halt business dealings with the Petrillos.

• **Strikes, pay hikes**—Top strike of the week, in significance, was the walkout of more than 600 AFL painters at Toledo, Ohio, who demanded a return to time and a half pay for overtime work and double time for work on Saturdays, Sundays and holidays. The premium rates were discarded 18 months ago after conferences with the Toledo Master Painters and Decorators Association, in favor of a "shift work" clause that provides a flat 25 cents an hour for overtime.

Painters claimed they were losing money under the "shift work" agreement, but turned down an employer offer of a five per cent increase, and retention of the offending clause.

Another major walkout started—but was over in a few days—in Kentucky, when ironworkers throughout the state

(Continued on page 68)

Worker physicals seen best accident insurance

Pre-employment physical examination of construction workers offers the greatest single opportunity to reduce accident-frequency rates. Insurance companies and medical examiners are strong for it; contractors are lukewarm; but organized labor looks at it with a jaundiced eye.

Nearly 250 members of the construction section of the National Safety Council listened to rapid-fire discussions of this controversial question by a six-man panel—including one labor leader—at its 39th national conference in Chicago.

• **Everybody benefits**—Consensus of the panel was: The contractor benefits by reduced accident-frequence rates, thus lower insurance costs, a better chance to match the job with the physical capabilities of a workman.

The worker gets a pre-employment examination—as well as periodical follow-up examinations—to disclose minor physical shortcomings that often can be corrected: by being assigned to jobs within his limitations, less likelihood of lost time accidents with their attendant physical discomfort; reduction of the chances of being injured permanently.

• **Why labor doesn't like it**—Workers, however, believe that job-placement physical examinations may be used to discriminate against individuals; the average workman considers such exams an "edict," and he doesn't like edicts.

In setting the stage for the discussions, J. A. DeLuca, division superintendent, E. I. duPont de Nemours, moderator of the panel, pointed out that no one is trying to improve the effectiveness of labor. "People," said he, "are still the most inefficient factor in doing little jobs on big projects."

• **Labor's share in planning**—Much of the misunderstanding regarding job-placement physical examinations and safety on the job, declared R. E. McFarland, secretary-treasurer, Construction and General Laborers' Union, Local 341, Anchorage, Alaska, results from the failure of management to let the unions share properly in the planning of such programs. Management's biggest problem, said he, is to sell organized labor on these programs.

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HOLYOKE WATER POWER COMPANY'S Hydroelectric Generating Plant on the Connecticut River, Holyoke, Massachusetts

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GENERAL CONTRACTORS
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. . . and when we realized we needed substantial tonnages of piling in specific sections and lengths — we found it gratifying to be able to rely on your dependable delivery. Our design was complicated and we must tell you your supplying exact specifications contributed to the success of this unusual job.

Very truly yours,
DANIEL O'CONNELL'S SONS, INC.
BY: Daniel J. O'Connell

Piling was driven 20 feet below river bed elevation 70 to establish firm anchorage. In certain sections, the bottom of the sheeting had to be grouted to existing underwater structures to effect a more water-tight construction.

INTERESTING NOTE: Mr. O'Connell's great-grandfather worked on the original wood dam, built over a hundred years ago, and his uncle worked on the present masonry dam constructed 50 years ago.

Contractor DANIEL O'CONNELL'S SONS, Inc. *Specified*—

FOSTER RENTAL PILING

Exceptional skill and workmanship were "musts" here—in the successful design and in the accurate setting and driving of steel sheet piling. These cofferdam cells, each 76 ft.-4¾ in. in diameter, were required to allow removal of an existing masonry abutment and thus clear the way for two large concrete intakes to carry water to the turbine in the company's new $6 million plant (15,000 KW capacity). Unusual complications made the job extremely difficult—seepage was heavy due to uneven surfaces of the river ledge below the piling, and with a maximum 46 ft. head of water, strong reinforcing was required.

With such extensive planning and scheduling required to complete this project efficiently, the contractor realized that dependable piling delivery had to be counted on—piling had to be the exact sections and the exact proper lengths. Foster was the one large source to turn to.

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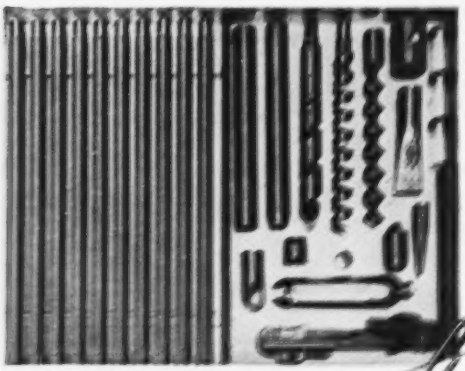

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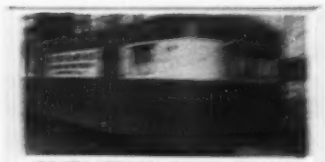

CONTRACTORS' OFFICE TRAILER

TRAILER VILLAGE SALES, INC.

CONSTRUCTION BUSINESS

DPA sets up ground-rules on fast tax write-offs

The Defense Production Administration has set up a new list of facilities that will get top priority consideration for rapid tax amortization.

Although some projects face delays, the whole fast tax write-off program is expected to speed up because of changes in the handling of the tax benefits.

Serious attempts are being made by defense officials to cut the red taps which has threatened to strangle the whole fast amortization program. There are more than 9,000 applications for fast tax write-offs, some of them months old, waiting action in one mobilization agency or another.

• **Delaying action**—What DPA did this week amounted to a delaying action, a step to make sure the most urgent types of plant expansion get fast write-offs while DPA chips away at the rest of the constantly mounting backlog of requests.

The agency tagged 10 types of new facilities for priority consideration. Applications covering new plant in these categories will get consideration ahead of any others, regardless of when the applications arrive in Washington.

• **The chosen**—The priority group includes (1) machine tools, cutting tools, dies, gages, jigs, etc., (2) ores, such as copper, lead and zinc, (3) sulphur, (4) military end items and supporting products endorsed by the armed forces, (5) pig iron, (6) basic aluminum, (7) nitrogen, (8) aviation gasoline, (9) steel scrap, and (10) special aluminum extrusions.

DPA will change the order of priorities themselves from time to time to make them conform with mobilization needs. The priority list may be dropped entirely when DPA feels it can keep abreast of the flow of new applications.

• **DPA trouble-shooter**—For the long haul, the most promising indication that fast amortization is in for better handling is the assignment of a trouble-shooter to head the program's administration. The new boss is James F. King, appointed deputy administrator and head of DPA's Office of Resources Expansion.

Mr. King is credited with drafting the new priority list and selling it to DPA boss Manly Fleischmann and defense mobilizer Charles E. Wilson.

Eventually, he hopes to work out more criteria. For example, plant expansion, somewhere along the line, must be tied to materials supply. A fast amortization certificate doesn't help if there is no structural steel available to build a plant.

In spite of the log-jams, a total of 3,663 industrial expansion projects, representing investment of more than $9.6 million, had been approved for rapid amortization, as of October 1.

September housing hits 91,000; up over August

Housing starts for September totaled 91,000 units on the basis of preliminary estimates, according to the Bureau of Labor Statistics.

The September total, coupled with the preliminary figure of 85,000 starts for August, and an upward revision of the June figure to 132,500 units, brought total starts for the first nine months of 1951 to 852,000.

This nine month total is well below the 1950 year-end total of 1,396,000 units started, but has already topped the announced goal (of government planners) of 500,000 to 800,000 units for the year, set as a target when 1951 started.

New titanium plant will step up output 800%

Titanium, the "wonder metal" which may replace steel and aluminum in some construction, is now in production at the newly-constructed Henderson, Nevada, plant of Titanium Metals Corporation of America. Actual production started last week.

The company will expand output rapidly until an initial production goal of 10 tons per day is reached late next year. This will be equivalent to eight times the present world production of titanium metal.

This increased production gains importance because the price of titanium drops as output increases. In time, many believe that titanium will be competitive with both aluminum and steel, in the construction industry.

Asphalt, tar roofing shipments increase

Shipments of all major types of asphalt and tar roofing and siding products during August were above July, according to the Bureau of the Census of the Department of Commerce.

Increases for major items amounted to 16, 19 and 21 percent respectively for insulated brick siding, saturated felts and asphalt roofing.

For the first eight months of the year, shipments of saturated felts were

(*Continued on page 70*)

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DIFFERENTIAL-ACTING
PILE HAMMERS
18C, 30C, 50C and 80C

Super-Vulcan drives piles down faster, easier, and with savings in costs. Twice the blows per minute does the job. And each blow requires 25 to 35 per cent less steam.

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Construction business . . .

15% higher than in the corresponding period of last year, while insulated brick siding and asphalt roofing showed slight decreases.

Nation's steel capacity jumps 10 million tons

Steel capacity increased in 21 states and pig iron capacity in 14, from 1948 to the start of 1951, according to the American Iron and Steel Institute.

During that time, the net increase in steelmaking capacity exceeded 10 million net tons, making a total capacity of more than 104 million tons annually as of January 1, 1951.

The increase in blast furnace capacity, including ferro-alloys as well as pig iron, was over 5.1 million tons, putting the new total above 72.5 million tons annually.

Construction financing

Major construction financing this week includes nearly $200 million in temporary loan notes scheduled for sale by 35 local housing authorities to pay for construction of low-rent housing projects.

The largest set of offerings, $143 million will come October 30.

• **Detroit Edison Co.**—Has been authorized by the Michigan Public Service Commission to sell $40 million in mortgage bonds. The utility will receive bids about the middle of November. The bond issue will take care of the company's construction needs until later summer of 1952.

Business briefs . . .

• **Open records**—The House approved a bill which would require a new clause in all government contracts negotiated without advertising. The clause would give the Comptroller-General access to the books and records of the contractor and subcontractor.

• **Million a year**—Minimum demand for new housing will be one million units a year for the next 10 years, Frank W. Cortright, executive vice president of the National Association of Home Builders, asserted. He predicted 850,000 homes will be built next year.

• **Cost index up**—The American Appraisal Company Construction Cost Index climbed five points during the third quarter to reach a new high of 536. Increased labor wages accounted for a four-point rise in July, and a 6% increase in freight rates in September added another point, the company said. In the index, 1913 equals 100.

NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

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WELDED BRIDGE DESIGN CUTS WEIGHT 3000 POUNDS PER LINEAL FOOT

by **Homer M. Hadley**
Consulting Engineer, Seattle, Washington

SUBSTANTIAL savings in cost have been made possible through the use of light, welded-steel box girders in the Patton Bridge near Auburn, Washington. Substituting steel box girders for concrete on the central 100 ft. of the 200 ft. main span of this bridge has eliminated 3000 pounds per lineal foot with resulting reductions in stresses and necessary reinforcement in the concrete portions of the bridge.

The steel box girders incorporate the simplest of details. Made entirely of light steel plate, they can be easily fabricated in any welding shop and at a very reasonable cost. Total contract price, this 430 ft. bridge, $96,606.10. Contract price, steel box girders, @ 15¢ per lb., $10,590.75.

Fig. 3—200 Foot Span Highway Bridge *at Auburn, Washington. Concrete slab on two box girders eliminates need for cross bracing.*

Fig. 4—Clean Exterior Surface *simplifies painting to keep down maintenance costs. Box construction is ideal where minimum depth is desired.*

WELDED DESIGN ALWAYS SAVES STEEL AND LOWERS COST

Fig. 1—Steel Box Girder Construction *half section at mid span for central 100 ft. of 200 ft. span highway bridge. H-20 loading. Web plates are ¼"; top flange is ⅜"; bottom flange is ⅜" to ¾". Stiffeners are ⅛" plate.*

Fig. 2—Detail of Half Section *near end of span shows use of ¾" bars for trussing the four interior corners. Zig-zag in pattern, the bars contact both web and flange plates.*

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Studies in Structural Arc Welding free on request. Designers and engineers write on your letterhead to Dept. 138.

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This has been true for 19 straight years. One reason is—Internationals pack bigger payloads for less money.

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No wonder, either, that he makes them pay off on the job. Teamed with a new International Truck he makes the effort that can keep your hauling costs *dirt cheap.* Why not see your International Truck Dealer or Branch and find out how you can keep your hauling costs down with Internationals.

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INTERNATIONAL TRUCKS

"Standard of the Highway"

UNIT PRICES BID BY CONTRACTORS

Water and sewer system additions, Mississippi

Alternate bids on vitrified clay and concrete sewer pipe feature the bidding on water and sewer system additions for Yazoo City, Miss., J. B. Williams & Co., Yazoo City, consulting engineer. The three bids were opened June 6, with a low of $45,184, work started July 30. Wage rates prevailing on the job are $1.60 for skilled labor, $1.10 for semi-skilled and $0.75 for common. Materials to be furnished by the City are shown in the table.

Bidders were:

1	C W. & S. Constr. Co., Jackson, Miss.	$45,184
2	Roy M. Mitchell Contr. Co., Tyler, Tex.	47,736
3	Southern Engr. Constr. Co., Laurel, Miss.	48,379

Sewers Bids 6-6-51 Items	Unit	Quan-tities	Unit prices 1-VCP	1C-CP	2-CP
8" San sew O-4	lf	2,191	$1.50	$1.40	$1.45
8" 4-6	lf	1,321	1.65	1.55	1.52
8" 6-8	lf	1,382	1.85	1.75	1.62
8" 8-10	lf	2,165	2.15	2.05	2.12
8" 10-12	lf	320	2.55	2.45	3.08
8" 12-14	lf	125	3.75	3.65	4.92
8" 14-16	lf	120	6.50	6.20	5.50
8" 16-18	lf	100	9.00	9.00	6.50
8" 18-20	lf	100	13.00	13.00	7.50
8" 20-22	lf	50	22.00	22.00	9.00
8" 22-24	lf	5	31.00	31.00	11.00
Manholes 0-4	ea	6	140.00	140.00	120.00
Manholes 4-6	ea	5	165.00	165.00	160.00
Manholes 6-8	ea	5	195.00	195.00	190.00
Manholes 8-10	ea	6	240.00	240.00	225.00
Manholes 10-12	ea	2	295.00	295.00	265.00
Manhole 14-16	ea	1	385.00	385.00	355.00
Manhole 16-18	ea	1	530.00	530.00	405.00
Manhole 20-22	ea	1	780.00	780.00	500.00
8" x 6" wyes	ea	185	4.30	3.80	7.35
6" 45° bends	ea	100	2.20	2.00	2.00
6" Stub-outs	lf	2,214	1.50	1.45	2.00
8" C I R/R X	lf	54	12.00	12.00	12.00
Rem & repl asph	lf	2,480	....	....	1.00

Water lines Items	Unit	Quan-tity	Unit prices 1 C	2
6" C I waterline	lf	5,500	$2.25	$2.25
Gate valves	ea	11	79.50	85.00
6" Cutting-in sleeves	ea	2	61.50	50.00
6" Cast iron fittings	ton	1.00	498.00	4.50
Tie-in to existing line	ea	4	25.00	75.00
Replace asphalt pavement	lf	10	3.50	1.00
Fire hydrants	ea	8	139.00	160.00
2" C I waterline	lf	870	1.20	1.07

Materials to be furnished by owner		
5,500	6" C/N pipe 18' lgths. Cl 150 (360 pcs)	$1.59
14	6" C/N tees	24.06
2	6" F-1220 cutting-in sleeves	20.43
11	6" H. E. gate valves	50.50
4	6" C/N 1/8 bends	14.50
356	6" C/N elands	N/C
356	C/N plain rubber gaskets	N/C
2,136	3/4 x 3-1/2" C/N T-head bolts & nuts	N/C
1,030	2" Screw & C/N Joint C I pipe	.575
8	Fire hydrants	145.35
2	6" x 2" C/N reducers	11.15
2	6" C/N plugs	4.01
4	6" C/N tees	24.18

Bituminous surfacing, Nebr.

A typical Nebraska bituminous surfacing job is on Highway No. 14 in Boone and Antelope Counties. Bids were received on March 1, 1951 by the Dept. of Roads and Irrigation, R. F. Weller, Chief Highway Engineer.

The unit prices shown in the following table are for three projects tied into one. One section of 0.973 mi has 3"x27' stabilized soil base course and 3"x24' bituminous mat surface course and armor coat. A section of 1.759 mi has 3"x25' stabilized soil base course and 3"x22' bituminous mat surface course and armor coat. The third section of 9.765 mi has variable 3"x27', 4"x27' and 5"x27' stabilized soil base courses, depending on type of soil, and a uniform 2"x26' bituminous stabilized base course and 2"x24' bituminous surface course and armor coat. This section is being built on an existing gravel road. The gravel crust is being retained.

Work started May 7 and was to be completed in 100 working days. The job is right on the railroad.

Minimum wages to be paid are: for skilled labor $1.05 to 1.25 per hour, for semi-skilled, $0.95 and for common labor, $0.75.

Bidders include:

1	C Missouri Valley Constr. Co., Omaha, Nebr.	$291,071
2	W. A. Fibs Engr. Co., Geneva, Neb.	293,297
5	M. M. Lippincott, Hastings, Nebr.	318,012

Bids: 3-1-51 Items	Unit	Quan-tity	Unit prices 1 C	2
Grading:				
Clear & grub	ls	....	$380.00	$380.00
Excavation	cy	8,700	0.40	0.30
Water, applied	M gal	706	2.90	0.50
Linear grade type "A"	mi	0.612	4,300	2,400
Type "B"	mi	1.148	4,300	4,100
Comb conc curb & gutr	lf	582	3.50	4.00
Grading for detour:				
Rental fully oper crlr tract & scrap	hr	10	14.00	15.00
Motor grader	hr	90	8.50	8.00
Sand gravel for cl "A" detour	cy	3,580	2.38	2.41
Culverts:				
Excav culverts	cy	195	0.10	2.00
Relaying CMP	lf	78	2.25	1.50
18" CMP, Req'd	lf	11	4.80	4.00
24" Req'd	lf	29	5.90	5.10
30" Req'd	lf	31.5	7.10	6.50
60" Req'd	lf	98	24.90	21.95
Remov old struct				
sta 28+25	ea	1	125.00	40.00
sta 62+75	ea	1	125.00	60.00
24" RCP	lf	38	5.90	4.95
48"	lf	36	14.10	13.20
18" RC drives	lf	40	3.80	3.40
24"	lf	20	4.90	4.35
Stab soil, base crse:				
Min agg, gravel	cy	14,880	2.38	2.41
Sand gravel	cy	6,340	2.38	2.41
Fine sand, loc pits	cy	3,420	1.15	1.15
Soil binder, loc pits	cy	1,400	1.05	1.30
Sandy binder, loc pits	cy	5,140	1.00	1.25
Asph oil, prime coat applied	gal	39,780	0.19	0.16
Manip plan No				
2-SSB-B type III	sta	93 065	18.50	27.00
2-SSB-C-RI type III	sta	226 556	20.00	28.00
IV	sta	224 342	26.00	31.00
V	sta	92 532	32.00	37.00
2-F-83 (9) type "A"	sta	21 454	33.50	41.00
2-S-355(3) type "A"	sta	2 910	26.00	45.00
Water applied	M gal	1,390	4.10	3.00
Rental fully oper				
crlr tract & scrap	hr	80	14.00	11.00
Motor grader	hr	150	8.50	8.00
Pneumatic-tired rolr	hr	80	1.25	1.50
Sheepsfoot roller	hr	70	1.35	1.00
Tractor	hr	150	4.10	4.00
Armor coat:				
Min agg, sand grav appld	cy	1,800	5.45	5.50
Asph oil applied	gal	44,590	1.55	1.55
Bit stab base course:				
Min agg, gravel	cy	4,800	2.38	2.41
Sand, gravel	cy	3,710	2.38	2.41
Fine sand, loc pits	cy	1,780	1.05	1.15
Filler, loc pits	cy	2,030	0.90	1.30
Asph oil tack coat appl	gal	10,900	0.21	0.16
Bit stab BC appl	gal	175,800	1.38	1.35
Manip plan No 2-BSB-R type II	sta	495.141	24.00	25.00
Bit mat surface course:				
Min agg, gravel	cy	6,310	2.38	2.41
Sand, gravel	cy	5,150	2.38	2.41
Fine sand loc pits	cy	2,440	1.10	1.15
Filler, loc pits	cy	2,790	1.00	1.30
Bit agg intersections	cy	140	4.50	7.00
Maintenance	cy	250	2.00	2.50
Asph oil tack coat appl	gal	13,300	0.21	0.16
Bit mat applied	gal	264,210	.138	.135
Manip plan No				
2-BM-B type III	sta	93,114	30.00	30.00
2-BM-C-RI type II	sta	495,213	23.00	26.00
Type III	sta	48,936	33.00	32.00
2-F-83 (9) type "B"	sta	21 454	40.00	32.00
2-S-355(3) type "B"	sta	2 910	50.00	41.00

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SEATTLE'S GREAT HYDRO-ELECTRIC PROJECT

Baldwin Turbines

The 540-foot Ross Dam, fourth highest structure of its kind in the world, is the key structure in Seattle's Mammoth Skagit project that provides most of the municipality's electric power . . . and that also controls the disastrous floods that once swept the valley.

Three Baldwin turbines, each rated at 120,000 hp with runners designed for 355 feet effective head will be installed soon, adding 270,000 kw to the city's available power supply. A fourth unit is scheduled for installation later. When the height of the dam is raised an additional 125 feet, runners adapted to 440 feet will be installed, boosting the capacity of each unit to 140,000 hp. The view at left is typical of the 178 inch, 53 ton Baldwin Francis-type turbine runners that will be installed.

★ ★ ★

Baldwin has four valuable assets to offer to any group concerned with hydro-electric development.

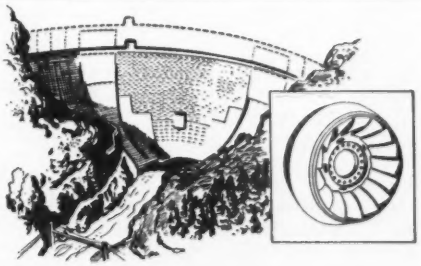
. . . A wealth of experience that covers every type of hydro project—plus a pioneering spirit that has repeatedly demonstrated that so-called "impossible" jobs *can be done.*

. . . A complete range of available capacities, that includes everything from small, fractional-horse power water wheels up to the largest units that can be shipped.

. . . A line that includes all four basic types of turbines—Impulse, Propeller, Francis, and Kaplan (adjustable blade). This permits unbiased selection of the type best suited to any head and flow condition.

. . . A complete line of valves, and other hydraulic machinery designed to function perfectly with the turbine units.

We will welcome an opportunity to discuss your project with you.



DESIGNED FOR FUTURE GROWTH

With an eye to the future, engineers designed the great Ross Dam for later growth. Ultimately, the height of the roadway will be raised to 665 feet, forming a lake 30 miles long with storage area of 3,450,000 acre-feet. Baldwin "know-how" will be utilized to design new turbine runners, no larger than the present ones, but adapted to the ultimate 440 foot effective head.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

R. I., Newport—B.A. 10/30—City, Sewer Comn., City Hall, Contrs. B, sewerage ejector station, Ruggles Ave. Plans deposit $25. CD 6/25.

† **Massachusetts**—B.A. 10/31—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, maintenance dredging in Fort Point Channel, Boston Harbor, CIVENG 19-016-52-12.

Conn., Hartford—B.A. 12/6—At office N. B. Henson, city purch. agt., Municipal Bldg., 550 Main St., refuse incinerator in North Meadows. Plans deposit $100. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs.; adv. ENR 10/25. CD 5/5/30.

BIDS ASKED—BUILDINGS

Conn., New Haven—BOILER HOUSE, etc.—B.A. 10/31—State P. Wks. Rpt., Hartford, boiler house and utilities, State Teachers College, B/A-R-47B. Plans deposit $25. CD 10/10, under LB.

Mass., Arlington — HOUSING — B.A. 11/1 — Arlington Housing Auth., 2 Freemont Court, twenty-five 2 story, bsmnt., brick 50 unit duplex buildings, Gardner and Freemont Sts. and Sunnyside Ave., Proj. 200-2, $695,000. Robt. W. Blaisdell, 70 Proctor St., Roxbury, archt. CD 2/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NEW HAMPSHIRE—State Dpt. P. Wks. & Hys., State House Annex, Concord.

Daniels Transportation Co., 10 Mascoma St., Lebanon, N. H., L. B. $171,195, two span, 164 ft. rein.-con. deck on steel stringers, bridge over Connecticut River in Colebrook, Bids Oct. 11. CD 10/3.

R. Zoppo Co., 942 Providence Hy., Norwood, Mass. LB $602,868, est. $500,000. Contr. 29, water trunk mains, prestressed cylinder pipe; LB $649,863, 36 in. steel pipe; LB $636,855, 30 in. concrete and 24 in. c.i. pipe, SPRINGFIELD, MASS. City, Bd. Water Comrs., City Hall, Springfield, Mass. Bogert-Childs Eng. Assoc., 624 Madison Ave., New York, N. Y., engrs. Bids Oct. 9.

BUILDINGS

LOW BIDS AND CONTRACTS

City, Pub. Welfare Dpt. & Park Dpt., City Hall Annex, Boston, Mass. rejected bids Sept. 1. MUNICIPAL BLDG., Ward 10, 1487 Tremont St., ROXBURY, MASS. LB. $892,880. Will re-advertise. CD 9/19 under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. Y., New York—TUNNEL PAVING—B.A. 10/29—At office Chief Engineer of Port of New York Auth., 111 8th Ave., Zone 11, paving George Washington Bridge, West 179 St. Tunnel, Contr. GWB-120.018. Plans deposit $10.

BIDS ASKED—BUILDINGS

Md., Baltimore—FIRE HOUSE—B.A. 10/31—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, Fire House 61, incl. offices, dormitory and raid shelter, 2 story bsmnt., brick, steel fire house, 40x90 ft., rein.-con. basement shelter, $365,000. Plans deposit $25. A. C. Radziszewski, 20 E. Lexington St., Zone 2, archt. James Posey, 10 E. Lexington St., mech. engr. Kubitz & Koenig, 202 Emerson Tower Bldg., structural engrs. CD 10/31/50.

N. J., Hillsdale—SCHOOL—B.A. 10/30—Bd. Educ., Boro of Hillsdale, Magnolia Ave., school addn., on Magnolia Ave.

† **N. Y., Fort Tilden**—CHAPEL—B.A. 11/1—U. S. Eng., 80 Lafayette St., New York, Zone 13, post chapel.

▲ **N. J., Irvington**—HOUSING—B.A. 11/14—Irvington Housing Auth., 24 Union Ave., Irvington, housing, incl. 125 units $1,250,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.

Hempt Bros., R. D. 1, Camp Hill, Pa., LB. $518,385, 3.11 mi. crushed stone base with bit. surf. 22 ft. wide; extend rein.-con. structure over Miney Run and rein.-con. arch over Branch of Mine Run, T. R. 16 and 116, Adams Co.;

Indyk Constr. Co. Inc., Box 215, Houston, Pa., LB. $313,928, crushed aggregate base with bit. surf. 0.95 mi., one rein.-con. structure, Leg. Rt. 02101, Allegheny Co.;

County Constr. Co., 25 E. Main St., Carnegie, Pa., LB. $400,350, crushed aggregate base with bit. surf., 4.59 mi. and 5 rein.-con. bridges over Tobey Creek, branch of Tobey Creek Brandy Camp Creek, McCauley Run and Kyler Run, Leg. Rtes. 24009 and 24023, Elk Co.;

Wagner Constr. Co., 115 S. Wyoming Ave., Kingston, Pa., LB. $124,808, bit. surf. 1.87 mi pavement, U. S. 22 (W. Union Blvd.), Lehigh Co.;

E. M. Brown, Inc., 11 Guelich Ave., Clearfield, Pa., LB. $297,128, widen 3.06 mi. pavement with crushed aggregate base 3 ft on each side and surf. new base and existing pavement with bit. 22 to 34 ft. wide, extend 2 rein.-con. bridges over Foster Brook, Traffic Rtes. 46 and 346, McKean Co.;

Herbert J. Elkins, 7348 Malvern Ave., Phila. 31, Pa., LB. $391,814, crushed stone base with bit. surf. 1.11 mi., divided highway-rein.-con. pavement 25 ft. and variable in width on each side of concrete divisor; separated east and west traffic lanes of rein.-con. pavement 24 to 57 ft. wide; one T-beam bridge and one rein.-con. box, Traffic Rtes. 23 and 143, Montgomery Co. Bids Oct. 11. CD 10/3.

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.

The S. T. Brotemarkle Constr. Co., P.O. Box 393, Cumberland, Md., CA. $539,931, 4.82 mi. crushed aggregate base with bit. surf., 18 ft. wide; one metal plate arch and exten. existing bridge over Trout Run from near Portage southwesterly to near the Blair-Cambria Co. line, T. R. 164, Cambria Co. Bids Sept. 28. CD 10/2, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y. CA. $1,595,000. P. S. 255 SCHOOL, Avenue S between E. 16 and Bedford Sts., BROOKLYN, N. Y. Bd. Educ., 49 Flatbush Ave. exten. Brooklyn 1, N. Y. Bids Sept. 20. CD 9/11.

▲ **Colmar Constr. Co.**, 364 Gold St., Brooklyn 1, N. Y. CA. $1,161,000. P. S. 214 SCHOOL, on 140 St. between 31 Rd. and 31 Dr., FLUSHING, N. Y. Bd. Educ., 49 Flatbush Ave. exten. Brooklyn 1, N. Y. Bids Aug. 30.

John J. Harvey Co., P.O. Box 27, Utica, N. Y. CA. Approx. $1,000,000. INFIRMARY bldg., UTICA, N. Y. The Masonic Hall and Asylum Fund, William T. Clark M. D. supt. Masonic Home, Utica 2, N. Y. Bagg & Newkirk, 258 Genesee St., Utica, N. Y. archts. Bids Sept. 7. CD 8/28.

▲ **A. C. S. Home Builders, Inc.**, Marne Highway, Hartford, Conn., Separate Contracts $5,500,000. 800 RESIDENTIAL developments, state Hy. Route 25, PENNSAUKEN, N. J. Edward A. L. Cox, 709 Market St., Camden, N. J., archt.

E. W. Bliss Co., Salem, O., CA. SHEET and STRIP MILL equip., ALLENPORT, PA. Pittsburgh Steel Co., Grant Bldg., Pittsburgh, Pa.

Morrow Bros., 2315 N. Charles St., Baltimore, Md., CA. $90,000, 2nd story masonry PLANT addn., and balcony on existing buildg., BALTIMORE, MD. Bethlehem Steel Co., 1101 Key Hy., Baltimore, Md.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects inviolved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **S. C., Charleston**—SPRINKLER SYSTEM—B.A. 10/30. Dpt. Navy, Officer in Charge of Constr., Box 365, Naval Base, automatic wet pipe sprinkler sys. in Bldg. 1198, at Charleston Naval Base, NOY 29420. Plans deposit $10.

S. C., North Augusta—B.A. 10/30—City, water supply imprvs. Plans deposit $20. Patchen & Zimmerman, Daniel Field, Augusta, Ga., engrs. CD 12/14.

† **Va., Craney Island**—B.A. 10/30—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, paving and drainage at Craney Island Fuel Facility, NOY 28488, Spec. 30124. Plans deposit $10.

† **Va., St. Juliens Creek**—TANK OVERHAUL BLDG.—B.A. 10/30—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, alterations, addns. to tank overhaul bldg., U. S. Naval Ammunition Depot. NOY 27098, Spec. 28936. Plans deposit $10.

† **Louisiana**—B.A. 10/31—U. S. Eng., Box 60, Vicksburg, Miss., approx. 1,884,000 cu. yd. earthwork, drainage structure, approx. 22,000 cu. yd. ditch excav., placing 60 cu. yd. grav., install 148 lin. ft. 42 in. culvert, Concordia Parish, Inv. 52-33. CD 6/26/46.

N. C., Goldsboro—B.A. 11/1—City, Z. G. Hollowell, city mgr., Goldsboro, WW imprvs., 3 m.g. filtration plant, plumbing, heating, electric, pumping equip. Plans deposit $20. Wm. C. Olsen, 5 Exchange Pl., Raleigh, engr. CD 4/17/50.

Tenn., Winchester—B.A. 11/1—Town, WW imprvs. Approx. $50,000. J. Sanders Parker, 816 8th Ave. S., Nashville, engr.

Ga., Macon — B.A. 11/2 — Bd. Water Comrs., c/o Wiedeman & Singleton, engrs., Box 1878, Atlanta, Contr. 2 intake basin and 25 m.g. raw water pumping unit at Riverside Pumping Station.

† **S. C., Sumter**—BARRACKS—B.A. 11/2—U. S. Eng., 33 Gustomhouse, Charleston, WAF and Armen's Barracks at Shaw Air Force Base. CD 9/25.

† **Kentucky and Ohio**—B.A. 11/5—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., local protection proj., Ashland, Ky. Sec. 3, in Ashland along the left descending bank of Ohio River, CIVENG 46-022-52-20. CD 9/24.

Miss., New Albany—B.A. 11/5—Union Co., 4 bridges $90,000. Leland B. Cook, Box 290, Tupelo, engr. Bids Oct. 2 rejected. CD 9/19.

† **S. C., Sumter**—RUNWAY, etc.—B.A. 11/5—U. S. Eng., Custom House, Charleston, runway extens. and new taxiway at Shaw Air Force Base, Inv. 52-6. Extended date. CD 9/26.

Ga., Ocilla—B.A. 11/6—City, drilling, casing, testing water well. Plans deposit $10. John J. Harte Co., 284 Techwood Dr. N. W., Atlanta, engr.

† **Miss., Biloxi**—ENGINE TEST BLDG.—B.A. 11/6—U. S. Eng., Post Office Bldg., Mobile, Ala., engine test bldg. addn. Keesler Air Force Base, Eng 01-076-52-25. CD 2/7.

N. C., Charlotte—B.A. 11/6—City, grading, paving Douglas Airport. Approx. $100,000. Plans deposit $25. CD 2/14.

† **Fla., Cocoa**—CRASH FIRE STATION, etc.—B.A. on or about 11/20. U. S. Eng., P.O. Box 4970, Jacksonville, Crash Fire Station and BOQ, Pinecastle Air Force Base, Eng. 08-123-52-56. CD 4/4.

† **S. C., Charleston**—BASE SHOP BLDGS.—B.A. after 11/22—U. S. Eng., Custom House, base shop bldgs. at Charleston Municipal Airport. Simons & Lapham, 17 Broad St., archts. CD 5/16.

† **S. C., Greenville**—BASE SHOP BLDGS.—B.A. After 11/22—U. S. Eng., Custom House, Charleston, base shop bldgs. at Donaldson Air Force Base. Simons & Lapham, 17 Broad St., Charleston, archts. CD 9/25.

BIDS ASKED—BUILDINGS

N. C., Greenville—LIBRARY—B.A. 10/30—East Carolina Teachers College, F. D. Duncan, bus. mgr., Greenville, 2 story, 777,248 cu. ft. library. Plans deposit $40 general constr. $20 each others. Eric G. Flannagan, Henderson, archt. CD 9/6.

La., Edgard—SCHOOL—B.A. 11/8—St. John the Baptist Parish School Bd., Edgard, high school, $350,000. Plans deposit $50. Wm. R. Burk, 632 Pirates Alley, New Orleans, archt. CD 10/9/50.

S. C., Charleston—HOSPITAL—B.A. 11/8—Charleston Co., tuberculosis hospital. Plans deposit $50. Simons & Lapham, 17 Broad St., archts. CD 10/3, under LB.

† **Va., Warrenton**—WAREHOUSES—B.A. 11/13—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., 2 warehouses, operations area at Vint Hill Farms, Eng. 49-080-52-20-(16). CD 10/12.

(Continued on page 78)

McKIERNAN-TERRY PILE HAMMERS

Help Beat Schedule on sewer project

Eight months ahead of schedule! That was the record chalked up on this Oakland outfall sewer line, despite wet heaving ground that required sheeting of trench every inch of the way. An ingenious mobile sheeting jig and fast-driving McKiernan-Terry Pile Hammers solved the problem.

Here's how. The jig held lagging for 20 lin ft of timber sheeting on both sides of the trench at the same time. Sheeting was driven quickly by McKiernan-Terry No. 6.5 Double-Acting Hammers . . . as much as 245 pieces of sheeting daily.

Wherever you need speed and pile-driving power, it will pay you to use dependable McKiernan-Terry equipment. Wide-range line includes 16 sizes of single-acting and double-acting hammers and 2 sizes of double-acting extractors. Write for bulletin.

McKiernan-Terry Pile Hammer punches down timber sheeting for fast sewer job in Oakland, Calif. Ben C. Gerwick Inc. and George C. Pollock Co. were the joint contractors.

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(Continued from page 76)

SOON LETS CONTRACT—BUILDINGS

Ky., Benham—PLANT—International Harvester Co., c/o D. E. Perkins, engr., Harlem, Ky., soon lets contract central power plant.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **West Florida Electric Service**, 419 W. Beach Rd., Panama City, Fla., CA, $105,348, instrument landing and ground control approach system at Tyndall Air Force Base, PANAMA CITY, FLA. U. S. Eng., P.O. Box 1169, Mobile 7, Ala. CD 7/18.

Hyde Constr. Co., P.O. Box 385, Jackson, Miss., LB, $147,730, grading, paving 7.499 mi., and bridge on county highway between Vernon and Ballard CANTON, MISS. Bd. Supervs. Madison Co., Canton, Miss. Bids Oct. 8. CD 9/26.

LOUISIANA—State Hy. Dpt., Baton Rouge.

Bartley & Binnings, 433 Gravier St., New Orleans, La. LB $127,706, repairing Harvey Canal Bridge, State Route 2, S.P. 63-02-08, Jefferson Parish. Bids Oct. 3.

H. & W. Welding Works, Port Barre, La. CA, $47,177 WW imprvs., PORT BARRE, LA. Village, Port Barre, La. Bids Sept. 6. (Correction—status). CD 9/14 under CA.

KENTUCKY—State Hy. Dpt., Frankfort.

Codell Constr. Co., Winchester, Ky., CA, $92,429 traffic bound reconstr. 5.988 mi. The Schultz Creek Rd., RS 45-511, Greenup Co. Bids Sept. 28. CD 10/8, under LB.

F. W. Owens Co., 119 N. No. 5 St., Louisville 1, Ky. LB $760,988. Valley High SCHOOL addn., VALLEY STATION, KY. Jefferson Co., Bd. Educ., 618 W. Jefferson St., Louisville, Ky. Bids Oct. 11. CD 9/24.

BUILDINGS

LOW BIDS AND CONTRACTS

Green-Mar Builders, Inc., 3601 S.W. 76 St., Miami, Fla., CA, $85,000, WAREHOUSE, 3601 N.W. 56 St., MIAMI, FLA. Pan American Terminal, c/o contractor.

Burk Constr. Corp., Inc., 1017 Kane Concourse, Miami Beach, Fla., CA, Approx. $85,000, WAREHOUSE, MIAMI, FLA. Atlas Terminals, Inc., c/o contractor.

Clifford J. Mueller, 14390 N. Miami Ave., North Miami, Fla. Owner Builds, $300,000, RESIDENTIAL DEVELOPMENTS, MIAMI, FLA.

Spector & Sons, 575 N.W. 22 Ave., Miami, Fla., CA Approx. $82,000, WAREHOUSE addn., MIAMI, FLA. Ward Distributing Co., 2222 N.W. 10 Ave., Miami, Fla.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Mich., Selfridge Air Force Base** — READINESS BLDG.—B.A. 11/5—U. S. Eng., 1900 Cadillac Tower, Detroit, frame readiness bldg., Eng-20-064-52-11 (Neg.). CD 7/3.

BIDS ASKED—BUILDINGS

Mich., Edwardsburg—SCHOOL—B.A. 10/30—Bd. Educ., Consolidated School Dist., Edwardsburg, brick, masonry school. $300,000. Louis C. Kingscott & Assoc., 511 Monroe St., Kalamazoo, archts. CD 8/29.

Ill., Urbana—HOUSING—B.A. 11/8—Housing Auth. of Champaign County, Harold R. Sloan, ex. dir., 101 N. Race St., 26 dwelling units on site for Project Ill. 6-5 and all incidental work thereto for complete entire project. Smith, Kratz & Strong, 101 S. Broadway, archts. Plans deposit $50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Rieth-Riley Constr. Co., 311 W. Monroe St., Goshen, Ind., CA, $64,320, b.conc., resurf. LaSalle St., Massachusetts to Hill Sts., SOUTH BEND, IND. Bd. P. Wks., City Hall, South Bend, Ind. Awarded Oct. 8. CD 12/14/44.

Taylor Bros., Inc., 985 Hayes St., Birmingham, Mich., CA, $118,200, road work, wid'n., straightening W. Maple, paving St. Andre, E. Maple Sts., etc., BIRMINGHAM, MICH. City, Irene Hanley, clk., Birmingham, Mich. Bids Sept. 12. CD 9/4.

Collins & Catlin, Port Huron, Mich., CA. Approx. $175,000, sewage disposal plant, treatment facilities, EAST CHINA, MICH. East China Twp., Town Clerk, East China, Mich.

Francis J. Corr, Inc., 1120 Sheridan St., Lansing, Mich. CA. $89,000, athletic field, concrete stands, facilities for sports, baseball, football, etc., Everett Athletic Field, LANSING, MICH. City, Bd. Educ., Lansing, Mich. Clark R. Ackley, 1811 E. Michigan St., Lansing, Mich., archt.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Sam W. Emerson Co.**, 1836 Euclid Ave., Cleveland, O. CA. Approx. $1,000,000. 2 story steel, 100,000 sq. ft. PLANT, CLEVELAND, O. The Ohio Crankshaft Co., 3800 Harvard Ave., Cleveland, O., Wilbur Watson Assoc., 4614 Propect St., Cleveland, O., archts. CD 1/9/51.

▲ **I. E. Millstone Constr. Co.**, 4343 Clayton Ave., St. Louis, 10, Mo., CA, $5,970,000, general contract;

Edward J. Maag Plumbing & Htg. Co., 333 N. 5 St., East St. Louis, Ill., $1,317,281 plumbing work, for HOUSING (A) John De Shields Homes, incl. 300 units Proj. Ill. 1-3; (B) Roosevelt Homes, incl. 300 units, Ill. 1-4; (C) Villa Griffin, 100 units Proj. Ill. 1-5, EAST ST. LOUIS, ILL. St. Clair County Housing Auth., J. E. Hays, exec. dir., 6 St. and Ohio Ave., East St. Louis, Ill. Bids Sept. 20. CD 10/9, under LB.

Schurrer Constr. Co., Pontiac, Mich., CA. Approx. $350,000, 2 story with wing, L-shaped, 75x240 ft., brick OFFICE, Long Lake Rd. and Woodward St., BLOOMFIELD HILLS, MICH. MacManus, John & Adams, Inc., 1200 Fisher Bldg., Detroit, Mich. Swanson Assoc., Bloomfield Hills, Mich., archts.

▲ **Darin & Armstrong, Inc.**, 2041 Fenkel St., Detroit, Mich. CA. Approx. $10,000,000 tank PLANT, GRAND BLANC, MICH. General Motors Corp., Fisher Body Div., General Motors Bldg. Detroit, Mich. Work underway. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich. archt. CD 6/29.

▲ **Darin & Armstrong, Inc.**, 2041 Fenkel St., Detroit, Mich. CA. Approx. $15,000,000. tank PLANT, LIVONIA, MICH. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich., Work underway. CD 3/30/51.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Wyoming**—TELEPHONE LINE—B.A. 10/30—Bureau Reclamation, Dpt. Interior, Casper, Wyo., constr. 35 mi. Casper-Alcova telephone line, Kendrick Proj., Spec. 703C-220. L. N. McClellan, ch. engr.

† **Tex., Roma**—B.A. 11/2—Bureau Reclamation, Dpt. Interior, El Paso, structural steel roof framing and misc. structural steel, United States side, Falcon Power Plant, Spec. D-4513. CD 1/6/49.

† **Tex., Amarillo**—GREASE and OIL STORAGE BLDG.—B.A. 11/6—U. S. Eng., Box 61, Tulsa 2, Okla., grease and oil storage bldg. $950,000. CD 10/3.

† **Tex., Kelly Air Force Base**—WAREHOUSE—B.A. 11/27—U. S. Eng., 606 Santa Fe Bldg., Galveston, Type "2" approx. 80,000 sq. ft., wood frame warehouse for U.S.A.F.S.S., San Antonio Air Material Aria, Inv. No. ENG 41-243-52-31. CD 7/24.

BIDS ASKED—BUILDINGS

† **Tex., Fort Sam Houston**—SCHOOL—B.A. 11/1—Community Facilities Service of Housing & Home Finance Agency, c/o W. H. Sindt, 1016 Texas and Pacific Bldg., Fort Worth, 18-room school for Fort Sam Houston Independent School Dist. $450,000. Extended date. Harvey P. Smith & Assoc., 1204 Natl. Bank Commerce Bldg., San Antonio, archts. Frank T. Drought, 117 W. Pecan St., San Antonio, engr. CD 10/3.

† **Tex., Amarillo** — BUILDINGS — B.A. 11/16 — U.S. Atomic Energy Comm., Herring Hotel, 8 buildings, Inv. No. 292-52-5. $750,000. Extended date. CD 9/19.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Beck & Johnson Co., Carrolton, Mo., LB $39,878,** emergency levee repairs on 16 levees right bank Missouri River, DeWitt bend to Lupus Reach, 87,000 cu. yd. earth fill, 78 mi. stretch also set back levees, CIVENG 23-028-52-66, MISSOURI. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Oct. 8. CD 10/3.

Griffin Constr. Co., Olathe, Kan., CA, $72,989, sanitary sewerage sys. in 80-acre development, Crosslands, Johnson Dr. to 55 St., Woodson St. to Lamar Ave., Mission Twp. OLATHE, KAN. Comrs. Johnson Co. Court House, Olathe, Kan. Awarded Oct. 9. CD 8/3.

M. A. Swatek & Co., Hightower Bldg., Oklahoma City 2, Okla. LB. $578,170, est. $672,000. Lake Hefner Filtration Plant addn., OKLAHOMA CITY, OKLA. City, City Hall, Oklahoma City 2, Okla. C. E. Bretz, 1916 N. Broadway, Oklahoma City, Okla., engr. CD 5/15/50.

▲ **Manhattan Constr. Co., Box 1421, Muskogee, Okla. LB $1,364,740.** Electronics Bldg., WICHITA, KAN. Boeing Airplane Co., Wichita Div., Wichita, Kan. Bids Sept. 25. CD 9/7.

Pan-American Pipe Line Co., M. Esperson Bldg., Houston, Tex., Own Forces. Approx. $675,000. addnl. 36 mi. 14 to 16 in. crude oil pipe line, Eldorado, TEXAS. CD 9/28.

Lone Star Gas Co., 1915 Wood St., Dallas, Tex., Own Forces. gas pipe line transmission from fields to transmission line, DALLAS, TEX. CD 5/1/47.

City, Ennis, Tex., Day Labor and Purchase. Approx. $35,000. rein.-con. surface reservoir, ENNIS, TEX. Bids Aug. 23 rejected, LB, $38,170. CD 8/16.

W. S. Bellows Constr. Co., 716 N. Everton St., Houston, Tex., CA. $63,335. storm and drainage lines; **CA. $38,800,** water lines, facilities; **CA. $61,115,** sanitary sewers, KELLY AIR FORCE BASE, TEX. Grand total $163,250. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. CD 4/19.

† **Bureau Reclamation**, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., cancelled bids to have been opened Oct. 9, gate lifting frame gate slot closures, guide engagement indicators for river outlets, Canyon Ferry Dam, Helena-Great Falls Div., Canyon Ferry Unit, Inv. No. DS-3508, MONTANA. CD 9/25.

† **Bureau Reclamation**, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., rejected bids Aug. 21 Schedule 3, switches, for Alcova Switchyard Kendrick Proj., Spec. DS3491, WYOMING. CD 7/17.

Taggert Constr. Co., Cody, Wyo., LB, $80,157, street imprvs. grading, curbs and gutters, valley gutters, gravel base course and bit. surf. with appurtenances Districts 1, 2 and 3, RIVERTON, WYO. City, City Hall, Riverton, Wyo. Bids Oct. 8.

Birchby & Nauman, Inc., 845 Navajo St., Denver, Colo., CA $61,689, est. $75,000, constr. sewer lines to hook onto Littleton's sewage plant, incl. approx. 21,-

572 ft. 6- to 12-in. sewer lines, LITTLETON, COLO. Littleton Sanitation Dist. 8, Littleton, Colo. Bids Oct. 5, awarded Oct. 9.

BUILDINGS

LOW BIDS AND CONTRACTS

Ricks-Maguire Constr. Co., Amarillo, Tex., Owner Builds. Approx. $400,000. 50 DWELLINGS, AMARILLO, TEX. CD 10/5.

▲† **Del E. Webb Constr. Co.,** Box 4066, Phoenix, Ariz. CA. $1,867,416. construction and modification 8 BUILDINGS, total 71,500 sq. ft. in new bldgs., Inv. 291-52-14, AMARILLO, TEX. U. S. Atomic Energy Comn., Los Alamos, N. M. Bids Sept. 18, awarded Oct. 10. CD 9/25, under LB.

▲ **American Smelting & Refining Co.,** Shell Rd., Corpus Christi, Tex., Purchase and Hire. $2,653,749, addnl. expansion of PLANT facilities, near CORPUS CHRISTI, TEX.

Wagner & Williams, Industrial Blvd., Dallas, Tex., CA. $175,000. Unit 1, mfg. electronic SHOP, DALLAS, TEX. Trammel Crow, 3600 Armstrong St., Dallas, Tex. CD 9/6.

Abercrombie Oil Co., Gulf Bldg., Houston, Tex., Own Forces. $310,000. 40 HOUSING units, FREEPORT, TEX. CD 7/13.

J. S. Norman Building Corp., 4815 Richmond Rd., Houston, Tex., Owner Builds. Approx. $350,000. several 1 story, masonry DWELLINGS in scattered locations; $372,000, 30 frame, masonry DWELLINGS; concrete slab fdn., HOUSTON, TEX. CD 4/27.

Cadenhead Constr. Co., and Subdivision Developers, Inc., Slattery Bldg., Shreveport, La., Owner builds. $150,000. INDUSTRIAL BLDG., LONGVIEW, TEX.

John Tarlton State College, Stephenville, Tex., rejected bids Sept. 26, wood and metal SHOPS, STEPHENVILLE, TEX. L.B. $150,597. CD 10/3, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Washington**—GOVERNORS—B.A. 11/1—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, governors for hydraulic turbines at Albeni Falls Dam, Inv. 52-1. Extended date. CD 10/4.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **IDAHO**—Bureau P. Rds., Dpt. Commerce, 609¼ Bannock St., Boise.

Woodall Bros., Boise, Idaho, CA, $237,175, advance clearing 6.94 mi. and grading 3.762 mi. McCall-Stibnite Hy. Proj. 48-B, Unit 1, Valley Co. CD 10/1.

† **Intermountain Plumbing Co. and Henry L. Horn,** Moses Lake, Wash., LB, $237,439, est. $169,364, earthwork, pipe lines and structures for Area P-2, laterals sublaterals and wasteways on Potholes East Canal, Columbia Basin Proj., Spec. DC-3538, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Oct. 4. CD 9/11.

WASHINGTON—State Hy. Dpt., Olympia,

Riverside Sand & Gravel Co., Yakima, Wash., CA . $68,410, stockpiling on Hys. 2, 3, 3A, 3-B and 11-A, Kittitas and Yakima Counties. Bids Oct. 9. CD 9/26.

† **Valley Constr. Co.,** 7708 Rainier Ave., Seattle, Wash., CA, $655,490, est. $621,500, aircraft refueling system and addns. to bulk fuel system at Fairchild Air Force Base, ENG 45-164-52-5, SPOKANE, WASH. U. S. Eng., P. O. Box 1217 Spokane, Wash. Bids Sept 18. CD 9/20, under LB.

▲ **Anderson Bridge Constr. Co. and Roy T. Earley Co.,** 4130 S. Adams St., Tacoma, Wash., LB, $1,342,265, est. $1,000,000, rein.-con., structural steel bridge over Port Industrial Waterway, TACOMA, WASH., City, City Hall, Tacoma, Wash. Bids Oct. 10. CD 9/14.

Puget Sound Bridge & Dredging Co., 2929 16 Ave. S.W., Seattle, Wash., CA, $149,800, dredging extension to Port Industrial Waterway, TACOMA, WASH. Port of Tacoma, Pier No. 2, Port of Tacoma Terminal, Tacoma, Wash. Bids Oct. 9. CD 9/21.

Sinole & Robinson, 1033 Avalon Blvd., Los Angeles, Calif., LB, $112,420, timber wharf deck and highline

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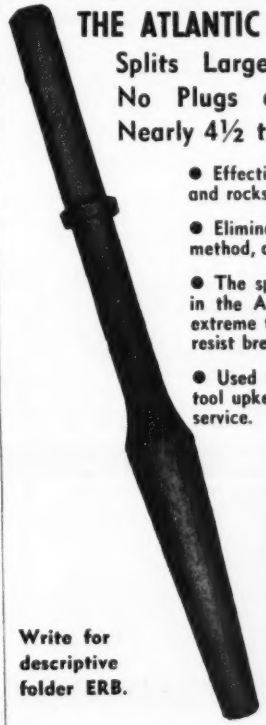

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tracks at Berth 181, SAN PEDRO, CALIF. Los Angeles Harbor Dpt., Branch City Hall, San Pedro, Calif. Bids Oct. 3. CD 9/14.

BUILDINGS

LOW BIDS AND CONTRACTS

School Dist. 408, Auburn, Wash., rejected bids Aug. 24, Terminal Park and Pacific City Elementary School addns., AUBURN, WASH. CD 8/10.

Modern Home Builders, 3849 34 Ave. W., Seattle, Wash., Day Labor, $600,000, 68 HOUSES, PASCO, WASH:

▲† L. H. Hoffman, 715 S.W. Columbia St., Portland, Ore., LB, $2,840,000, pile TECHNOLOGY BLDG. and RADIOMETALLURGY BLDG., RICHLAND, WASH. General Electric Co., Richland, prime contractor to Atomic Energy Comn. for operation of Hanford Works, Richland, Wash. Bids Oct. 10. CD 10/3.

Hirsh Edmunds 246 S. Robertson Blvd., Beverly Hills, Calif., CA, $889,200, 80 frame, stucco DWELLINGS,, Burke Richeon, Harley and Wiley Sts., DOWNEY, CALIF. Carlton Builders 246 S. Robertson Blvd., Beverly Hills, Calif. Major Drafting Service, Downey, archt.

Dowd-Hoefer Co., 174 S. Sierra St., Fontana, Calif., LB $368,000, est. $300,000, Fontana High SCHOOL adn., FONTANA, CALIF. Chaffey Union High School Dist., Ontario, Calif. Bids Oct. 9. CD 9/27.

The Contracting Engineer, 2310½ W. Vernon St., Los Angeles, Calif., CA, metal frame WAREHOUSE and SHOP, LONG BEACH, CALIF. Associated Telephone Co., 520 Elm Ave. Long Beach, Calif. Maurice Sasso, 124 W. 4 St., Los Angeles, engr.

Zoss Constr. Co., 1037 N. Cole Ave., Los Angeles, Calif., LB, $450,000, est. $500,000, NURSES HOME at County General Hospital, LOS ANGELES, CALIF. Bd. Supervs. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Oct. 9. CD 9/19.

Cotton Constr. Co., Box 222, Chula Vista, Calif., LB $327,666, MUSIC BLDG., SHOWER and LOCKER BLDG., SAN DIEGO, CALIF., San Diego Unified School Dist., 825 Union St., San Diego, Calif. Bids Oct. 9. CD 10/5.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska**—REMOTE RECEIVER FACILITY—B. A. 11/6—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, remote receiver facility, Ladd Air Force Base, Inv. S95-507-52-7. Plans deposit $25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Chris Berg, Inc. & Assoc.**, 2730 Westlake Ave. N., Seattle, Wash., CA. $393,000, est. $409,133, crash and structural fire station, Inv. S95-507-52-4, Eielson Air Force Base, ALASKA. U. S. Eng. (APO 942, c/o PM Seattle, Wash.) Anchorage, Alaska, Bids Oct. 9. CD 9/11.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Baynes Manning Ltd., 1010 Seymour St., Vancouver, B. C., CA, $330,000, installing water pipe line at military camp, WAINWRIGHT, ALTA. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. Bids Aug. 14, awarded Sept. 27. CD 8/10.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Colo., Colorado Springs**—City, constr. storage reservoir, water station, pipe line, etc. for Blue River Diversion Proj., Hoosier Tunnel and Eleven Mille Canyon, $9,300,000. Black & Veatch, P.O. Box 6071, Kansas City, Mo., consult. engrs. CD 1/30.

Idaho, McCall—City, City Hall, voted bonds replace wood stave mains with c.i. pipe, extending system, repair reservoir, etc. $100,000. CD 9/28.

▲ **La., Alexandria** — City, voted bonds, waterworks, imprvs. $1,775,000.

▲ **La., Shreveport**—City, voted bonds, water works and sanitary sewer imprvs. $1,750,000. CD 9/6.

▲ **Mass., Salem and Beverly**—Cities of Salem and Beverly, Beverly Water Supply Bd., c/o Salem City Treas., 93 Washington St., Salem, reservoir, approx. 250 acres, storage capacity 1,700,000,000 gals. $2,225,000. Metcalf & Eddy, 1300 Statler Bldg., Boston, consult. engrs. CD 12/12/50.

▲ **N. M., Albuquerque**—City, voted bonds, water sys. $3,458,000. E. O. Betts, city engr.

O., Tallmadge—Village, Ethel M. Rush, clk., Tallmadge, bond election November 6, water supply imprv. program. $200,000. CD 10/24/46.

▲ **O., Toledo**—City, City Hall, voted bonds, WW imprvs. $7,500,000. George Van Dorp, city water comr. CD 6/27.

S. C., Allendale—City, WW imprvs. $400,000. Thomas & Hutton, 204 E. Bay St., Savannah, Ga., consult. engrs.

S. C., Edgefield—City, WW imprvs. Approx. $200,000. Patchen & Zimmerman, Daniel Field, Augusta, Ga., consult. engrs.

Tex., Gladewater—City, voted bonds, water treatment plant, $100,000. Joe E. Ward, 545 Nacol Bldg., Wichita Falls, and Otto Staerker, 209 Phillips Bldg., consult. engrs. CD 9/5.

Tex., Henderson—City, voted bonds, c.i. water lines, $75,000; deep water supply well, $40,000. CD 9/20.

Tex., Pecos—City, 11 mi. water line extending to 2 sects. south of city, $90,000; drilling, developing 2 deep water supply wells, $50,000. John Oglesby, city engr.

SEWERS, WASTE DISPOSAL

Calif., Los Angeles—City, City Hall, sanitary sewers in Jefferson Blvd. and Mismer Ave. Sewer District $103,851. Lloyd Aldrich, city engr.

▲ **Ga., Marietta**—City, Sanitary Sewer Project 9-P-1077 $800,000; Sanitary Sewer Project 9-P-1079, $552,000. Merritt & Walker, P.O. Box 477, consult. engr.

▲ **Ill., Chicago**—Sanitary Dist. of Chicago, 910 S. Michigan Ave., Zone 5, Harms Road Interceptor Sewer Extension No. 2, 9,000 ft. poured concrete sewer tunnel and 10,500 ft. 36 in. concrete pipe, $1,750,000. CD 3/1.

Ill., Lake Forest—City, City Hall, main sanitary sewers along Hawthorne, Deerpath, Sheridan and Washington Rds., $500,000. Wm B. Douglas, city engr.

Ia., Paulina—city, sewage plant, $165,000, Hitchcock & Estabrook, 521 Sexton Bldg., Minneapolis, Minn., consult. engrs.

La., Napoleonville—Town, voted bonds, sanitary sewer imprvs., $200,000. CD 8/29.

Md., Taneytown—City, Raymond Perry, mayor, City Hall, 32,000 ft. sewers, $160,000; pumping station, 1,800 ft. 8 in. force main, $30,000; sewerage treatment plant, $70,000. Whitman, Requardt & Assoc., 1304 St. Paul St., Baltimore, Zone 2, engrs.

Mass., Woburn—Dpt. P. Wks., Woburn, sewerage sys., from Campbell St. at High School over Montvale Ave. to Jefferson Ave. $200,000.

▲ **N. M., Albuquerque**—City, voted bonds, sanitary sewerage sys. imprvs. and rehabilitation, $2,894,580; storm sewers, $1,508,000; enlarging sewage disposal plant, $732,000. E. O. Betts, city engr. CD 9/28.

▲ **O., Toledo**—City, City Hall, voted bonds, sewage, secondary treatment plant, $10,000,000. John H. Davis, city engr. comr. CD 9/12.

S. C., Allendale—City, sanitary sewer imprvs. $750,000. Thomas & Hutton, 204 E. Bay St., Savannah, Ga., consult. engrs.

S. C., Edgefield—City, sanitary sewer imprvs. Approx. $300,000. Patchen & Zimmerman, Daniel Field, Augusta, Ga., consult. engrs.

▲ **Tenn., Knoxville**—City, City Hall, bond election November 15, sewage disposal plant, $5,500,000. CD 4/15/46.

▲ **Tex., Brownsville**—City, storm sewer repairs, $100,000; sewage disposal plant, $584,000; sanitary sewerage sys. overhaul and rehabilitation, $250,000; sanitary sewer collection and trunk lines, $316,000; master drainage sys., $400,000. Sigler, Clark & Winston, Box 1428, Weslaco, Tex., consult. engrs. CD 1/5.

Wis., Elk Mound—Village, sewage treatment plant and sewers, $120,000, Davy Eng. Co., 524 Main St., La Crosse, consult. engr.

Sask., Regina—Municipality, sewage disposal plant imprvs., incl. rehousing 2 circular filters; one high rate filter, one clarifier; new rising main, $345,000. D. A. R. McCannell, City Hall, engr. CD 11/13/46.

BRIDGES

Calif., Nevada City—Bd. Supervs. Nevada Co., Court House bridge across Trukee River to replace Brockway Cutoff Bridge across Trukee River, $100,000.

▲ **N. Y., New York**—Dpt. P. Wks., Municipal Bldg., Zone 7, Manhattan Approach to Queens Boro Bridge, to carry traffic from Upper Level to 63 St., 1st to 2nd Aves., $1,239,000; imprv. approaches to Queens Boro Bridge, Long Island City Approaches, $3,470,000; construct North Upper Deck Roadway on Queens Boro Bridge over East River from Manhattan to Queens Boros, $1,030,000. Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York 6, N. Y., consult engrs.

STREETS AND ROADS

GEORGIA—State Hy. Dpt., 2 Capitol Square, Atlanta, Ga.

Hall Co.—wid'n. 7 mi. Highway 23, $500,000.

N. M., Albuquerque—City, voted bonds, street const., $100,000. E. O. Betts, city engr.

N. Y., Big Flats—Town, 17.9 mi. roads, $130,900.

N. Y., Catlin—Town, 15 mi. roads, $105,000.

N. Y., Erin—Town, 17.1 mi. roads, $119,700.

N. Y., Johnsburg—Town, 17.798 mi. roads, $122,500

N. Y., Luzerne—Town, 21.1 mi. roads, $166,350.

N. Y., Oyster Bay—Town, 50.4 mi. roads, $950,175.

N. Y., Putnam Valley—Town, 10.75 mi. roads, $262,800. CD 11/21/44.

N. Y., Stony Creek—Town, 16 mi. roads, $112,000.

N. Y., Thurman—Town, 21.4 mi. roads, $149,800.

N. Y., Warrensburg—Town, 16.896 mi. roads, $118,300.

Tenn., Knoxville—City, City Hall, sidewalks at 30 city schools. $250,000. CD 2/8/45.
Tex., Austin—Travis Co., Court House, approx. 75 mi. road imprvs. throughout county, incl. general repairing surf., drainage, $414,984; new road constr. in north and east sects. of county approx. 12 mi. $157,800.
Tex., Bay City—Town, street imprvs. and paving, $300,000. Charles R. Haile & Assoc., 2801 San Jacinto St., Houston, consult. engr. CD 9/6.
Tex., Cuero—City, bond election deferred, street imprvs., asph. paving, concrete curbs and gutters. $175,000. CD 8/15.
Tex., Fort Worth—City, City Hall, wid'n. University Dr., Contr. 2, to 36 ft., incl. concrete bridge over Clear Creek. $266,000. C. M. Thelin, dir. Pub. Wks. Eng. CD 9/17.
Tex., Rockport—Aransas Co., Court House, 3.2 mi. farm to market road connecting with Hy. 35 at San Patricio Co. line, $60,000; 8.4 mi. farm-to-market road, west of Rockport to Hy. 35 south of Copano Bay, $90,000.
Tex., Sweetwater—Roscoe-Nolan Co., Court House Sweetwater approx. 30 mi. new road constr. and repairing, drainage. $100,000.
Tex., Vernon, and Oaklaunion—Wilbarger Co., Vernon, road repairing, imprvs., drainage, approx. 40 mi. in Vernon, Oaklaunion and northern sect. of county. $150,000.
Va., Richmond—City, bond election Nov. 6, street imprvs. $150,000. CD 10/7/43.
WASHINGTON—State Hy. Dpt., Olympia.
Grant Co.—Imprv. Burke-Quincy Rd., $200,000. Moses Lake $100,000.
Okanogan Co.—Omark north, $200,000; Winthrop Mazama $50,000. W. A. Bugge, state hy. dir.

EARTHWORK, WATERWAYS

▲ **California—Oroville—Wyandotte Irrigation Dist.**, James Bruce, dir., Oroville, constr. hydro-electric project, incl. rock-fill dam 150 ft. high across south fork of Feather River creating the Grass Valley Reservoir, concrete arch dam 136 ft. $26,200,000.
Tex., Kenedy—City, straightening channel of Escondido Creek for flood prevention project. $157,000.

AIRPORTS

▲ **O., Toledo**—AIRPORT—City, voted bonds, airport Bancroft St. near McCord Rd. $1,700,000. Clayton Piper, city aviation comr. CD 6/19.
▲ **Okla., Tulsa**—RUNWAY—Douglas Aircraft Co., Inc., 3000 Ocean Park Blvd., Santa Monica, Calif., runway extens. $6,000,000. Brittelle, Ginner & DeBold, Santa Fe, N. M., consult. engrs. CD 9/19.

LATIN AMERICA

▲ **Mexico, Monterrey and Tampico**—Patronata del Ahorro Nacional Dr. Josue Saenz, sec. gen.) Mexico City, plans houses for workers. $1,720,000.

AMERICANS ABROAD

▲ **India, Bombay**—California Texas Oil Co. Ltd., Standard Vacuum Co., and Burmah-Shell Co., New Delhi, India (Headquarters, Burmah-Shell Co.) 20,000 bbl. capacity refinery, Approx. $7,500,000.

PUBLIC BUILDINGS

▲ **Calif., Compton**—SCHOOLS—Compton Union High School Dist., 601 S. Acacia St., plans by Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, frame, stucco Paramount High School, $1,000,000; plans by Jerome S. De Hetre, 414 N. Burris Ave., Compton, frame, stucco Centennial High School, $1,000,000. CD 11/1/50.
Calif., El Sobrante—SCHOOL—Pinole-Hercules Union Elementary School Dist., Grammar School Bldg., Pinole plans by Jack Buchter, 41 Morgan Highway, Orinda, school. $500,000.
Calif., Cantua—SCHOOL—Cantua Elementary School Dist., Ralph Minnite, principal, P. O. Box 198, Cantua Creek, plans by William Hastrup, Anglo Bank Bldg., Fresno, school near Coalinga, $500,000.
Calif., Monterey—SCHOOL—Monterey City Elementary School Dist., Glen T. Goodwil, supt., Box 1031, plans by Chas. E. Butner, 1112 Pajaro Park Way, Salinas, Framont Elementary School, $450,000. F. W. Kellberg, 320 Market St., San Francisco, structural engr. and Clyde E. Bentley, 3045 Sansome St., San Francisco, mech. engr. CD 10/3/50.
Calif., Salinas—HOSPITAL—Salinas Valley Memorial Hospital Dist., Salinas, $500,000 bond election Nov. 27 5 story hospital, Romie Lane and Wilgart Way. CD 10/2.
▲ **Calif., Stockton**—SCHOOL—Stockton Unified School Dist., 324 Exchange Bldg., plans by Mayo & Johnson, 307 Exchange Bldg., West Side High School, $1,928,000 plans by Elmore G. Ernst, 561 East Harding Way, Southside Elementary School, $475,000. CD 6/14.
Conn., Greenwich — HOUSING — Town Housing Auth., Greenwich, low-rent housing, $953,000.
Conn., Westport—HOUSING—Town Housing Auth., Westport, housing, $616,000.
Ind., Lapel—SCHOOL—Bd. School Comrs., Lapel, combined high school and grade school on south side, $450,000.
▲ **Ind., Southport**—SCHOOL—Nelson Swift, trustee, Perry Twp., 1950 Edgewood Ave., plans by Lennox & Matthews, 644 E. Maple Rd., Indianapolis Southport Junior High School, Shelby and Banta Aves. $1,300,000. CD 4/7/40.
▲ **Ia., Waterloo**—CITY HALL—City, $1,250,000 bond election Nov. 6, city hall,
▲ **Ky., Allen**—HOSPITAL—Floyd Co. Fiscal Court, plans by Dtis & Grimes, Tyler Bldg., Louisville, hospital, $1,200,000.
† **Md., Aberdeen**—OFFICE, etc.—U. S. Eng., 24 St. and Maryland Ave., Baltimore Zone 18, plans by Palmer, Fisher, Williams & Nes, 1020 St. Paul St., Baltimore, 60x230 ft. surveillance office and shop bldg., permanent type bldg., DA-18-020-Eng-254, at Aberdeen Proving Ground. $400,000. Van Rensselaer Saxe, 1701 St. Paul St., Baltimore, structural engr., Whitman, Requardt & Assoc., 1020 St. Paul St., Baltimore, mech. engrs.
▲ **Md., Baltimore**—SCIENCE, etc.—State Dpt. P. Improvements, 506 Park Ave., Zone 1, plans by Hall, Border & Donaldson, 2517 St. Paul St., 3 story, bsmnt., stone science bldg. and equip. providing facilities for chemistry and physics, Morgan College, $1,045,000. Egli & Gompf, Inc., 1019 N. Calvert St., mech. engr. Alex E. Forrest, 518 Cathedral St., structural engr. Nathan L. Smith, c/o owner, ch. engr. CD 11/15-50.
▲† **Md., Camp Detrick**—LABORATORY, etc.—U. S. Eng., First and Douglas Sts., N.W., Wash. 25, D. C., plans by H. K. Ferguson Co., engrs. and archts., 31 E 12 St., Cleveland, O., boiler plant, chemical bldg., control laboratory; plans by Turpin, Wachter & Assoc., engrs. and archts., 1004 N. Charles St., Baltimore, misc. bldgs., laboratory bldgs. $29,603,758. CD 11/17/50.
▲ **Mass., Plymouth**—SCHOOL—Town, School Dpt., Town Square, plans by Walter M. Gaffney, 43 Potter St., Hyannis, 1 story, 35x296 ft., brick veneer, wood frame Manomet, School. $3,000,000.
† **Mich., Battle Creek**—DEPOT—U. S. Eng., Cadillac Tower, Detroit, plans by Louis C. Kingscott & Assoc., Inc., 511 Monroe St., Kalamazoo, concrete depot bldg., Fort Custer. $427,000. CD 8/2.
▲ **Miss., Meridian**—PLANTS—City, voted bonds, mfg. plants for Textron Inc., and W. S. Dickey Clay Mfg. Co. $8,100,000. CD 9/24.
▲ **Neb., Omaha**—HOSPITAL UNIT—University of Nebraska, State Bd. Control, Lincoln, psychiatric unit at University of Nebraska Medical College and Hospital. $1,250,000. John Latenser & Sons, 1307 Farnam St., consult. engrs. CD 8/28.

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LONG ISLAND CITY, N. Y.

Branch Warehouse
3rd AVE. & ADAMS ST.
GARY, INDIANA

O., Chadron—SCHOOL—Bd. Educ., West Geauga School Dist., Chadron, bond election Nov. 6, school, $500,000. CD 1/31.

O., East Akron—SCHOOL—Bd. Educ., Springfield Local School Dist., East Akron, bond election Nov. 6, schools addns., imprvs. $800,000.

▲ **O., Garfield Heights**—SCHOOL—Bd. Educ., Garfield Heights bond election Nov. 6, fireproof school and present bldgs. addns., also utility bldg. to house equip. $1,400,000. CD 12/13/48.

▲† **Tenn., Bristol**—PLANT—Dpt. Navy, 18 St. and Constitution Ave. N. W., Wash. 25, D. C., guided missile plant, Sperry Gyroscope Co., Inc., Great Neck, N. Y. $25,000,000.

Tex., Palacios—SCHOOL—Palacios Independent School Dist., Palacios, plans by Avery, Pierce & Norris, 313 N. Colorado St., Houston, school, $300,000; high school, $450,000.

Tex., Port Isabel—HIGH SCHOOL—Port Isabel Independent School Dist., Port Isabel, new high school, 44 lots on north side. $550,000.

▲† **Va., Richmond**—WAREHOUSES—U. S. Eng., Box 119, Norfolk, Zone 1, three warehouses, two 200x900 ft., and other 200x200 ft. Richmond Quartermaster Depot. $3,360,000.

Ont., Peterborough—HOUSING—City, H. Waddell, chn. 100 housing units, Approx. $700,000. Central Mortgage & Housing Corp., 441 Queen's Quay W. Toronto, 2B, Ont., archts.

▲ **Ont., Port Arthur**—HOUSING—City, J. Styffe, acting mayor, 370 housing units, $2,150,000. Central Mortgage & Housing Corp., 400 Kensington Bldg., Winnipeg, Man., archts.

COMMERCIAL BUILDINGS

Ark., Forest City—HOSPITAL—St. Francis Hospital Bd., Forrest City, 50 to 60 bed hospital. $500,000.

Calif., Los Angeles—COLLEGE OF NURSING—Queen of Angels Hospital, 2301 Bellevue Ave., plans by Barkers Ott, 4334 Pico Blvd., 6 story, rein.-con. College of Nursing addn., $400,000.

Calif., Presidio of San Francisco—HOUSING—Dpt. Navy, P. Wks. Office, Twelfth Naval Dist., Federal Office Bldg., San Francisco, and Dpt. Army, Military Works Branch, 180 New Montgomery St., San Francisco, construct, manage, finance 133 dwellings units for Navy and 367 units for Army, Angus McSweeney, 514 Mission St., San Francisco, archt. and engr.

▲ **Calif., San Francisco**—HOSPITAL—St. Francis Hospital, Hyde and Bush Sts., plans by Frank T. Georgeson, 355 Stockton St., remodernization and hospital addns. $2,000,000.

Calif., Santa Rosa—HOUSING—Hugh Codding, 2065 Elizabeth Way, housing, bounded by Sonoma Ave., Spring Creek, Yulupa and Fanquette Aves., $500,000.

▲ **Fla., Fort Lauderdale**—SHOPPING CENTER—Antioch College Foundation, c/o Gamble, Pownall & Gilroy, archts., 1407 E. Las Olas Blvd., shopping center. $3,000,000.

Ill., Chicago—EXCHANGE—Illinois Bell Telephone Co., 212 W. Washington St., Chicago, Zone 6, plans by Holabird & Root & Burges, 180 N. Wabash St., Zone 1, 4 story, 50,000 sq. ft. dial exchange bldg. $600,000. CD 1/13/50.

▲ **Ill., Chicago**—NURSES HOME—St. Mary of Nazareth, 1120 N. Leavitt St., 6 story, bsmnt., nurses home, $1,000,000. Consoer, Townsend & Assocs., 351 E. Ohio St., Chicago, 11, Ill., consult. engrs. and archts.

▲ **Ia., Davenport**—HOSPITAL—Mercy Hospital, 1326 Lombard St., hospital addn., $2,100,000.

Ky., Richmond—HOUSING—Dpt. Army, Second Army Camp, Meade, Md., construct, manage, finance 65 addnl. housing units for Blue Grass Ordnance Plant.

▲ **Md., Baltimore**—HOSPITAL—Associated Jewish Charities, monument and Eutaw Sts., plans by James R. Edmunds, Jr., 130 W. Hamilton St., 8 or 9 story, bsmnt. and subbsmnt., general hospital bldg., 4 story bsmnt., obstetrical bldg.; 4 or 5 story, bsmnt. nurses home; 3 story staff quarters; research and service bldgs., all brick, rein.-con., steel constr $9,000,000. Henry Adams, Inc., 2315 St. Paul St., mech. engr. Crout, Snyder & Crandall, American Natl. Bank Bldg., structural engrs.

▲ **Md., Baltimore**—HOSPITAL—Franklin Square Hospital, 110 N. Calvert St., plans by James R. Edmunds, Jr., 130 W. Hamilton St., 4 story 75-bed brick hospital addns., alterations. $1,000,000.

▲ **Md., Baltimore**—SHOPPING CENTER—Mondawin Corp., c/o Moss Rouse Corp., 345 St. Paul Pl., shopping center, department store, covering 6 acres, theatre, parking area for 4,000 cars, total plot area 45 acres.

▲ **Mass., Framingham** — APARTMENT — Buckminster Realty Co., c/o Joel Eastman, 89 State St., Boston, plans by Charles R. Greco, 11 Beacon St., Boston, 100 unit apartment, $1,000,000.

▲ **Mo., St. Louis**—HOSPITAL—Lutheran Hospital, c/o Lutheran Charities Assoc. of St. Louis, Dr. Theodore Schroder, chn., 2646 Potomac St., Zone 18, plans by Froese, Maack & Becker, 705 Oliver St., Zone 1, 5 story X-shaped masonry, stone, rein.-con., etc. hospital addn. $3,500,000. CD 10/28/46.

N. Y., Brooklyn—HOSPITAL—Menorah Home & Hospital for Aged & Infirm, 871 Bushwich Ave., Zone 21, plans by William I. Hohauser, 151 W. 51 St., New York, Zone 19, 5 story hospital addn., 869 Bushwich Ave. $550,000.

N. Y., New York—APARTMENT—Hennessey Constr. Co., 545 West End Ave. Zone 24, plans by Lucial Visciotta, c/o owner, 3 story apartment, 219 St. and Carpenter Ave. $350,000.

▲ **Tex., Garland**—DWELLINGS—Bonnie View Building Corp., L. J. Walling, constr. supt., Garland, Sect. 1, 34 masonry trim, asb. siding dwellings, concrete slab fdn., $300,000; Sect. 2, 42 frame, dwellings, concrete slab fdn. $328,000; Sect. 3, 50 stucco, frame dwellings, concrete slab fdn., $410,000; Sect. 4, 59 masonry, frame dwellings, concrete slab fdn. and floors, $472,000, in area of Smithwick Addn.

▲ **Tex., Houston**—OFFICE—Great Southern Life Insurance Co., 401 Louisana St., will not construct, 15 story, bsmnt. office, 5200 Blk. Main St. $3,500,000. Project abandoned. CD 5/3/51.

Tex., Houston—DWELLINGS—Harold P. Hill & Wm. H. Williams, 1534 Woodcrest St., 30 frame, brick dwellings, concrete slab fdn., region of Holmes Rd. and Jutland. $560,000.

Tex., Houston—DWELLINGS—Howard Housing Co., c/o Knollwood Village, 30 frame, masonry dwellings, Fairhope Pl., Ashwood and Prescott Sts. $400,000.

Tex., Houston—APARTMENT—Pleasantville Apartments, Inc., 4605 Montrose Blvd., plans by Lloyd & Morgan, 4605 Montrose Blvd., 103 unit frame apartment, 1000 blk. Pleasantville Dr. $450,000.

Tex., Irving—DWELLINGS—Lloyd Blaylock, Belton St., Dallas, 50 frame, masonry dwellings, concrete slab fdn. $450,000.

Tex., Irving—DWELLINGS—Grady Fowler & Assoc., Irving, 18 one and two story brick dwellings, concrete slab fdn. heating units, air-conditioning, north of city, $325,000; 30 masonry, frame dwellings, concrete slab fdn., Grauwyler Rd., $360,000.

▲ **Tex., Irving**—DWELLINGS—Mayflower Investment Co., c/o Carr P. Collins, 912 Commerce St., Dallas, 40 frame dwellings, Sect. 1, west of city; $300,000; 48 frame dwellings, Sect. 2 west of city, $336,000; 45 frame dwellings, Sect. 3, west of city, $315,000; 55 frame dwellings, $385,000.

Tex., Irving—DWELLINGS—O.E. St. Clair, Irving, 28 frame, brick dwellings, concrete slab fdn., north of here, $365,000; 22 rock exterior dwellings, concrete slab fdn., unit heating, air-conditioning, off Sowers Rd. $374,000.

Tex., Pasadena—DWELLINGS—Pasadena Investment Co., Pasadena, 67 brick, frame dwellings, Sunset Terrace west to Winkler Dr. extens. $670,000.

Tex., Waco—VOCATIONAL—Waco Methodist Home, Waco, plans by Walter Cocke, Jr., 1507 Franklin St., 5-unit institutional vocational training, $550,000; vocational school bldg. $300,000. CD 4/3.

Alaska, Ketchikan—APARTMENT—Baldwin Constr. Co., 1103 N. 36 St., Seattle 3, Wash., will not construct 36 unit Wingren Court Apartment. $427,000. Project abandoned. CD 3/12/51.

INDUSTRIAL BUILDINGS

▲ **Ill., Chester**—PLANT—Colchem Corporation, c/o Ferdinand Eberstadt & Co., Wall St. New York, N. Y., constr. coal hydrogeneration plant on 38,000 acre tract along Mississippi River adjacent to here. $100,000,000-$400,000,000.

Ill., Franklin Park—PLANT UNIT—Binks Mfg. Co., 3118 Carroll St., Chicago, Zone 22, plans by Graham Anderson, Probst & White, 80 E. Jackson St., Chicago 4, Ill., first unit 60,000 sq. ft. stamping plant $500,000. CD 9/5.

▲ **Ill., Skokie**—FACTORY, etc.—Ohmite Mfg. Co., 4835 Flournoy St., Chicago, Zone 44, plans by Friedman Alschuler & Sincere, 223 Jackson St., Chicago, 6, Ill., factory and office, Howard and Central Park Aves., $1,300,000.

Ind., Lafayette—LABORATORY, etc.—Armour & Co., Union Stock Yards, Chicago, 9, Ill., laboratory-research. $500,000.

▲ **Ky., Paducah**—PLANT—B. F. Goodrich Chemical Co., 500 S. Main St., Akron, O., chemical plant, $5,000,000.

▲ **La., Baton Rouge**—REFINERY EXPANSION, etc.—Esso Standard Oil Co., North Baton Rouge, refinery expansion, $35,000,000; chemical plant expansion, $10,000,000. CD 9/4.

Mich., Owosso—FACTORY—Universal Electric Co., George Hoddy, pres., Owosso, 1 story, 60,000 sq. ft. factory. $500,000.

N. M., Albuquerque—LABORATORY—Lovelace Foundation, c/o Dr. W. R. Lovelace, II, 4800 Gibson Ave., plans by Ferguson-Stevens & Assoc., engrs.-archts., 111 S. Amherst St., 3 story masonry research laboratory, concrete pier and beam fdn. $750,000.

N. Y., Buffalo—SCRAP IRON DEPOT—Samuel Greenfield Co., Inc., 31 Stone St., scrapiron depot for processing steel scrap. $126,621.

▲ **O., Toledo**—WAREHOUSE—General Foods Corp., 250 Park Ave., New York, N. Y., warehouse, on 21-acre site Westwood Ave. north of Dorr St. $1,500,000.

O., Youngstown—FACTORY—General Fireproofing Co., Logan Ave., 125x1,000 ft. factory addn. to produce jet fighter and bomber plane parts, extending from Upland Ave. to 300 ft. beyond Gypsy Lane. $500,000. CD 7/25.

Okla., Holdenville—MILL—Seamprufe, Inc., 412 5th Ave., New York, N. Y., plans by Harold Flood, Ardmore mill. $700,000. CD 3/5/51, under Public Buildings.

▲ **Tenn., Memphis**—PLANT—Sinclair Refining Co., 633 N. Front St., plant on 11½ acres on President Island. $2,000,000.

▲ **Tex., Calallen**—POWER PLANT—Central Power & Light Co., 120 N. Chaparral St., Corpus Christi, electric power plant. $20,000,000.

Tex., Corpus Christi—WAREHOUSE—Caller-Times Publishing Co., 820 Lower Broadway, 26,000 sq. ft. warehouse, $275,000. Engineers Associated, 1218 S. Staples St., consult. engrs.

Tex., Houston—PLANT—Capitol Steel & Iron Co., 1726 S. Agnew St., Oklahoma City, Okla., fabricating plant, incl. aircraft hangars, structural steel fabrications for gins, warehouses, etc. on 10-acre site Hempstead and Long Point Rds. $400,000.

Tex., Houston—SHOP—Ethyl Corp., National Standard Bldg., plans by Bodman & Murrell, Reymond Bldg., Baton Rouge, La., and Golemon & Rolfe, 915 Woodrow St., locomotive and garage shop on Ship Channel. $110,000. CD 8/24/50.

▲ **Tex., Houston**—PLANT—Shell Chemical Corp., Shell Bldg., ethyl chloride plant expansion at Deer Park. $4,000,000.

Tex., Houston—SHOP—Smith Chevrolet Co., 5519 Memorial Dr., plans by Irvine & Hoyt, 5519 Memorial Dr., 2 story rein.-con. fdn. and frame, brick exterior auto sales and service, shop. $300,000.

Tex., Pampa—PLANT—Skelly Oil Co., Pampa, reconstruct major portion distributing plant, $100,000.

Tex., San Antonio — WAREHOUSE, etc. — Handy-Andy Community Stores, Inc., 801 N. Cherry St., plans by Shoop & Roberts, 112 S. Olmos St., 50,000 sq. ft. general warehouse unit, $375,000; fixtures mfg. plant, $85,000; bakery plant, $100,000; poultry, egg, cheese warehouse, $90,000; produce warehouse, incl. cold storage, $100,000; refrigeration plant, $85,000; garage maintenance shop and storage $100,000. CD 12/26/50.

Tex., San Antonio—WAREHOUSE—Community Realty Co., 801 N. Cherry St., masonry warehouse, 3022 E. Houston St. $275,000.

Tex., San Antonio—INDUSTRIAL CENTER—G. S. McCreless, 1102 Fair Ave., masonry industrial center, incl. filling and service station. $175,000.

Wash., Seattle—WAREHOUSE—Sears Roebuck & Co., 2465 Utah St., plans by Young & Richardson, Carleton & Detlie, Central Bldg., Zone 4, 177x295 ft., rein.-con. warehouse addn. $250,000. CD 10/8/51.

Wash., Spokane—TERMINAL—Consolidated Freightways, Inc., 2029 NW. Quimby St., Portland, Ore., freight terminal, $250,000.

▲ **Wash., Vancouver**—PLANT—Aluminum Co. of Ameerica, Gulf Bldg., Pittsburgh, Pa., plant, $40,000,000.

UNCLASSIFIED

▲ **Arkansas**—GAS LINES—Mid-South Gas Co., 500 E. 3 St., Little Rock, gas lines in Greene, Poinsett, Crittenden, St. Francis, Lee, Phillips, Monroe, Woodruff, Cross, Union, Calhoun, Lonoke and White Counties, $10,000,000.

Calif., Monterey—EXPOSITION BLDG—Monterey Co. Fair Bd. Fairgrounds, Monterey, plans by C. J. Ryland, Box 847, Monterey, exposition bldg. at fairgrounds, $550,000.

Ia., Keokuk—SWIMMING POOL—City, $185,000 bond election Nov. 5, swimming pool. CD 12/8/44.

Miss., Amory—PARK FACILITIES—City, voted bonds, park facilities, $125,000.

Montana—RURAL DISTRIBUTION LINES—Fergus Electric Co-operative, Lewistown, 128 mi. rural distr. line and sys. imprvs., Fergus Co. $260,000. CD 7/14/50.

Nevada—TELEPHONE LINES—Lincoln Co., Telephone System of Pioche, Nev., rebuilding 26 mi. existing line, radio-telephone serve other imprvs. near Pioche, Lincoln Co. $242,000.

N. M., Albuquerque—PARKS—City, voted bonds, parks, $135,000. E. O. Betts, city engr.

N. Y., Brooklyn—PIPE LINE—Brooklyn Union Gas Co. 176 Remsen St., Zone 2, 3,700 ft. pipe line to supply natural gas to Williamsburg Power Plant. $110,000.

O., Columbus—BROADCASTING CENTER—Edward Lamb, Security Bldg., Toledo, plans by Albert F. Tynan, 287 E. Broad St., television broadcasting center on 3-acre tract, Harmon Ave. and Griggs St. with 2 large studios, etc.

O., Toledo—GAS LINES—Ohio Fuel Gas Co., Huron St., install approx. 1 mi. 16 in. medium pressure gas line from Huron to Mettler Sts., $80,000; install 6- to 16-in. gas distr. lines on Douglas and Berdan Aves., $65,000; install 6- to 12-in. gas distr. lines in Berdan Ave. from Jackman to Martha Sts., $65,000. C. C. Johnson c/o owner, engr.

▲ **S. C., Greenwood**—GAS SYSTEM—City, Greenwood, natural gas sys. $3,500,000. Barnard & Burk, 1023 Nicholson Dr., Baton Rouge, La. consult. engrs. CD 4/16.

Texas and Louisiana—RADIO STATIONS—Mississippi River Fuel Corp., 407 8 St., St. Louis, Mo., base radio stations, Woodlawn, Tex. $90,000; one each at Minden and Perryville, La., $115,000 complete; Athens, La., $90,000.

Texas—RURAL TELEPHONE LINES—Wes-Tex Telephone Co-operative, Stanton, 576 mi. rural telephone above-ground lines, Martin Co. $456,000.

Tex., Dallas—TRANSFORMERS—Dallas Power & Light Co., Dallas Power & Light Bldg., addnl. construction of transformers at Cedar Crest and Haskell Stations. $161,380.

Wash., Cathlamet—SALMON HATCHERY—State Dpt. Fisheries Smith Tower, Seattle 4, Wash., salmon hatchery on Elokomin River, $400,000.

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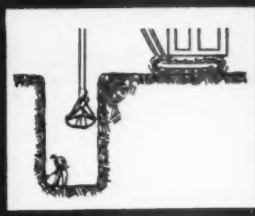

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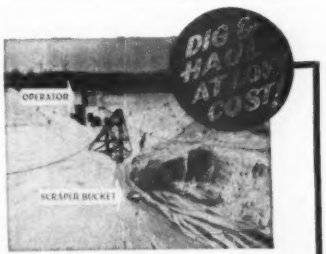

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CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 30, November 1 Massachusetts

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **G. B. H. Macomber Co.**, 19 Milk St., Boston, Mass. $1,000,000. one or several FACTORY bldgs. for mfg. WD 1 signal wire program, WEST ACTON, MASS. The Rex Corp., 51 Lansdowne St., Cambrdge, Mass.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 1 New Jersey
STREETS AND ROADS
November 1 New Jersey
November 2, 9 Pennsylvania

BIDS ASKED—BUILDINGS

▲ **Pa., Pottstown**—HOUSING—B.A. About 11/1—Montgomery County Housing Auth., Penn Village, Pottstown, housing, community bldg. and playground. $1,600,000. Willing, Sims & Talbutt, 1700 Sansom St., Phila., archts. CD 12/19/49.

▲ **Pa., Phila.**—GARAGE—Bids Asked—Simon & Boulware, archt., 123 S. Broad St., garage, Walnut St. between 18 and 19 Sts., for Phila. Parking Auth., Packard Bldg., $1,043,800. CD 5/28.

SOON LETS CONTRACT—BUILDINGS

▲ **Pa., Pittstown**—POWER STATION—Scranton Electric Co., 507 Linden St., Scranton, soon lets contract, electric power station addn. $10,000,000. Gilbert Assoc., Inc., 412 Washington St., Reading, engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **PENNSYLVANIA**—State Hy. & Bridge Auth., 506 N. Office Bldg., Harrisburg.
Latrobe Road Constr. Co., Latrobe, Pa., LB. $2,097,964, est. $2,600,000. construct 4.37 mi. roadway (divided) on rein.-con. pavement and bridges, east of Blairsville on Route 22, Indiana Co.;
Allegheny Asphalt & Paving Co., Bingham and 8 Sts., Pittsburgh, Pa., LB. $1,452,239, est. $1,900,000. construct c. conc. pavement 7.07 mi. between Moravia and Koppel as Turnpike Feeder, T. R. 18, L. R. 77 (14), Lawrence and Beaver Counties. Bids Oct. 11. CD 9/24.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Oak Park Homes**, c/o Stanley Klein, archt., 89-31 161 St., Jamaica, N. Y., Owner Builds. $1,000,000. 70 one-family HOUSES, 228 St. between Horace Harding and Northern Blvds., BAYSIDE, N. Y.

▲ **Wilaka Constr. Co.**, 11 E. 44 St., New York 17, N. Y. LB. $1,144,000 general constr. Redfern HOUSES, Proj. No. NYS-55, Sect. II, incl. Bldgs. Nos. 6 to 13 inclusive in area bounded by Nassau County line, Jeanette, Dabney and Redfern Aves., and Hassocok St., Queens Boro, FAR ROCKAWAY, N. Y. New York City Housing Auth., 63 Park Row, New York 38, N. Y. Bids Oct. 9. CD 9/13.

▲ **Silbert Park Homes**, c/o Samuel Paul, archt., 143-18 Jamaica Ave., Jamaica, N. Y., Owner Builds. $2,500,000. 258 HOUSES on tract bounded by Massachusetts, Atlantic, Illinois and Eastlake Aves., MASSAPEQUA PARK, N. Y.

▲ **Syndicate**, Samuel Rudin, pres., 36 W. 44 St., New York 18, N. Y. Owner Builds. $3,000,000. 19 story APARTMENT for 360 families, Washington Square North, Fifth Ave. and W. 8 St., NEW YORK, N. Y. CD 3/8/51.

▲ **Bleznak Bros.**, 814 N. Broad St., Woodbury, N. J. LB, $1,834,000, construct, manage and finance 230 unit Title 8 HOUSING, LAKEHURST, N. J. Dpt. Navy, P. Wks. Office, Phila. Naval Base, Phila., Pa. Bids Sept. 21. CD 9/12

Morris Hills Regional Dist. Bd. Educ., Rockaway, N. J., rejected bids July 10, High SCHOOL, ROCKAWAY, N. J. LB $908,478. CD 8/9, under LB.

▲ **Glenbrook Constr. Co.**, 960 Glenbrook Ave., Bryn Mawr, Pa. Separate Contracts. $5,460,000. RESIDENTIAL DEVELOPMENT, Ellis and Paddock Rds. and Merrybrook Dr., HAVERTOWN, PA.

▲† **Hughes-Foulkrod Co.**, 1505 Race St., Phila., Pa. CA. $2,000,000. 3 permanent WAREHOUSES, site preparation and grading, NEW CUMBERLAND, PA. Dpt. Army, 24 and Maryland Ave., Baltimore, Md. Balance of $4,-114,341 project to be awarded when funds are available. Bids Sept. 14. CD 9/19, under LB.

▲ **Edward J. Walsh**, 111 Fairfield Rd., Upper Darby, Pa., Separate Contracts. $1,250,000. RESIDENTIAL development, Rose Valley and Avondale Rds., NETHER PROVIDENCE (P.O. Media), PA.

▲ **Mariani Constr. Co.** 7050 Roosevelt Blvd., Phila., Pa., Separate Contracts. $4,000,000. RESIDENTIAL development, Rhawn St. and Roosevelt Blvd.; $1,000,000; RESIDENTIAL development, Roosevelt Blvd. and Bustleton Ave., PHILA. PA. S. Sherwin Rochlis, 5664 Diamond St., Phila., Pa., archts.

▲ **Parkman Homes, Inc.**, 1900 Devereau Ave., Phila. Pa., Separate Contracts. Approx. $1,725,000. RESIDENTIAL DEVELOPMENT, Woolston Rd., Phil Elena and Dorset Sts., PHILA. PA.

▲† **John McShain, Inc.**, 17 and Spring Garden Sts., Phila., Pa. LB $6,000,000. BUILDING, MARYLAND. U. S. Eng., First and Douglas Sts. N. W., Wash., D. C. Shreve Lamb & Harmon, 11 E. 44 St., New York, N. Y., archts. Parsons, Brinckerhoff, Hall & Mcdonald, 51 Broadway, New York, engrs.

▲ **Mc Closkey & Co.**, 1620 W. Thompson St., Phila., Pa., CA, $1,000,000, APARTMENT. 1601 N. Franklin St., WILMINGTON, DEL. J. Frank Darling, 7 St. and Greenhill Ave., Wilmington, Del. Morton E. Bleich, North American Bldg., Wilmington, Del., archt. CD 7/21/49.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 9 Alabama
STREETS AND ROADS
October 30 West Virginia
November 2 Kentucky
October 31 Louisiana
November 9 Alabama

BIDS ASKED—BUILDINGS

N. C., Goldsboro—HOUSING—B.A. 11/1—Eastern Carolina Regional Housing Auth., Drive 2, 90 housing units. $700,000. Plans deposit $50. W. B. Griffin, Edwards Bldg., archt.

N. C., Clinton—HOUSING—B.A. 11/1—Eastern Carolina Regional Housing Auth., Drive 2, Goldsboro, 70 housing units. $500,000. W. B. Griffin, Edwards Bldg., Goldsboro, archt. CD 3/22/50.

▲† **Ky., Fort Knox**—BUILDINGS etc.—B.A. 11/28—U. S. Eng., 830 W. Broadway, Louisville, Zone 3, 84 buildings, 12 underground magazines, supporting facilities, walks, parking areas, etc. Approx. $38,000,-000. Plans deposit $100. Louis & Henry, Starks

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UNIVERSAL AFFILIATES—Concrete Pipe Co. of Ohio with plants in Cleveland, Youngstown and Sandusky, Ohio and Erie, Pa.; Florida Concrete Pipe Co., Ocala, Fla.; Dixie Concrete Pipe Co., Louisville, Ky.

IF YOU'RE CONTRACTING ABROAD, you can take Universal *mobile* pipe-making equipment with you. Ask for details.

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Home Office: 297 S. HIGH ST., COLUMBUS 15, OHIO

Bldg., Louisville, archts., Warren Van Praag, Decatur, Ill., engr. CD 9/28.

Va., Glasgow—PLANT—Bids Asked—James Lees & Son, Bridgeport, Pa., plant. $600,000. United Engineers & Constructors, Inc., 1401 Arch St., Phila. Pa., archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Texas Constr. Co.,** Box 1384, Dallas, Tex. CA $1,047,846. compacted portion of embankment, approx. 1,280,000 cu. yd., high level crossing over West Atchafelaya Floodway, KROTZ SPRINGS, LA. New Orleans, Texas & Mexico Railway Co., C. S. Kirkpatrick, ch. engr., 204 Union Station, Houston, Tex. Bids Sept. 19, awarded Oct. 11. CD 9/25, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Armstrong Constr. Co.,** Kingsport, Tenn., CA. $1,030,000. Gladeville Dist. HIGH SCHOOL, WISE, VA. Wise Co., Wise, Va. Charles B. McElroy, Wise, Va., archt. Bids July 10.

▲ **Fiske-Carter Constr. Co.,** Spartanburg, S. C., CA. Approx. $2,000,000. thread finishing PLANT, TRYON, N. C. Kilburn Mills, c/o Lockwood-Greene Engineers, engrs., Montgomery Bldg., Spartanburg, S. C., Bids Aug. 21. CD 8/20.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ill., Dixon—SCHOOL—B.A. 10/30—School Dist. 170, High School Bldg., elementary school, $900,000. Smith, Kratz & Strong, 101 S. Broadway, Urbana, archts. CD 11/29/45.

SOON LETS CONTRACT—BUILDINGS

Mich., Cutlerville—HOME—Christian Reformed Church, Cutlerville, soon lets contract brick, masonry Children's Home, $500,000. J. & G. Daverman, Keeler Bldg., Grand Rapids, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **A. L. Jackson Co.,** 161 E. Erie St., Chicago, Ill., LB. $2,000,000, two hangars at Chicago Midway Airport for constellations planes, CHICAGO, ILL. Transworld Airlines, Municipal Airport, Kansas City, Mo. Bids Sept. 10. CD 9/5.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **A. Alfini Constr. Co.** 517 Thacker St., Des Plaines, Ill., Owner Builds, $1,000,000, 80 RESIDENCES, near Algonquin and Wolf Rds. DES PLAINES, ILL. Awarded Oct. 8.

▲ **E. H. Morhoefer Jr. Co.,** 505 N. La Salle St., Chicago, 10, Ill., CA, $1,929,900, HOSPITAL, HINSDALE, ILL. Hinsdale Sanitorium & Hospital, 12 N. Oak St., Hinsdale, Ill. Bids Aug. 28, awarded Oct. 10. CD 9/24, under LB.

▲ **Mazzucco Constr. Co.,** 4 E. Clinton St., Joliet, Ill., CA, $2,000,000, 1 story, bsmnt., brick, stone CHURCH, JOLIET, ILL. St. Raymond's Church, Raynor Ave., Joliet, Ill. Bids Sept. 24, awarded Oct. 9. CD 9/19.

▲ **Best Built Homes Development Co.,** 232 E. Erie St., Chicago, 11, Ill., Owner Builds, $3,500,000. 300 one story HOMES, WAUKEGAN, ILL. Rosene & Watts, 232 E. Erie St., Chicago, 11, Ill., archts.

▲ **Bagley-First State Corp.,** Albert Pick, Jr., pres., c/o Smith-Hinchman & Grylls, archts., 800 Marquette Bldg., Detroit, Mich. Owner Builds. $2,000,000. altering, completing shell of bldg., 342 APARTMENT HOTEL, First and Bagley Sts., DETROIT, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

October 30 Iowa
November 2 Missouri, South Dakota
November 2, 7 Kansas

STREETS AND ROADS

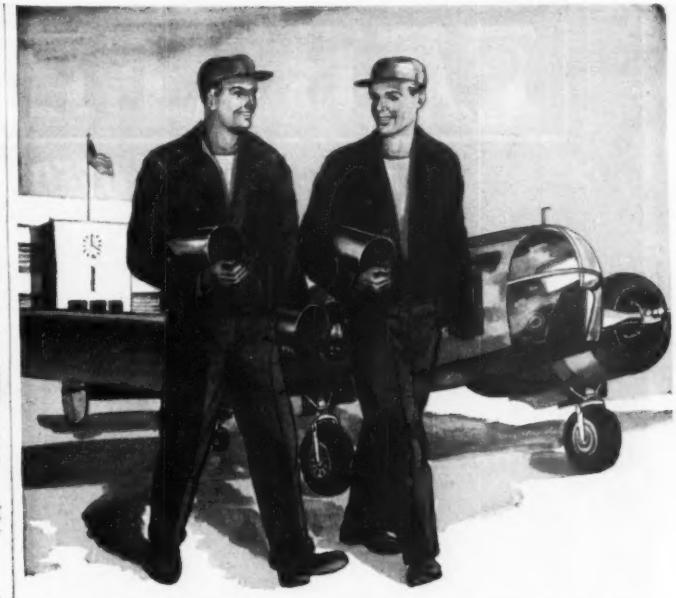
October 30 Iowa
November 2 Missouri, South Dakota
November 2, 7 Kansas

BIDS ASKED—BUILDINGS

Minn., St. Louis Park—SCHOOL—B.A. 10/31—Bd. Educ., R. C. Fernstrom, clk., high school, addns., alterations. $575,000. Plans deposit $25. Haxby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, archts. CD 8/23.

Minn., International Falls—SCHOOL—B.A. 11/2—Bd. Educ., F. A. Hilke, clk., 1 story, bsmnt., 67x352 ft., 86x97 ft. wing, Holler Grade School. $500,000. Plans deposit $25. A. R. Melander, 603 Alworth Bldg., Duluth, archt. CD 12/27/45.

N. M., Albuquerque—GEOLOGY—B.A. 11/2—University of New Mexico, c/o Bd. Regents, Albuquerque, 3 story, bsmnt. L shaped, 66x123 ft. and 53x132 ft., concrete, concrete block and stucco exterior, etc. geology bldg. $750,000. Extended date. Meem, Zehner, Holien & Assoc., Box 628, Santa Fe, archts. Phillips-Carter-Osborn, 602 Insurance Bldg., Denver, Colo., M. V. McIntyre, Santa Fe, and H. H. Herman, 1226 California St., Denver, Colo., engrs. CD 10/9.



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It is estimated that the cost of a ground survey on a large flood control project would have been over $3,000,000 and would have taken over 10 years. An Abrams Aerial Survey cut costs 90% — resulted in savings averaging over $5,000 a day. Time saved on the project was eight years.

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Manufacturers of Diamond and Shot Core Drills, Accessories & Equipment

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Dept. E, Scranton 2, Penna.

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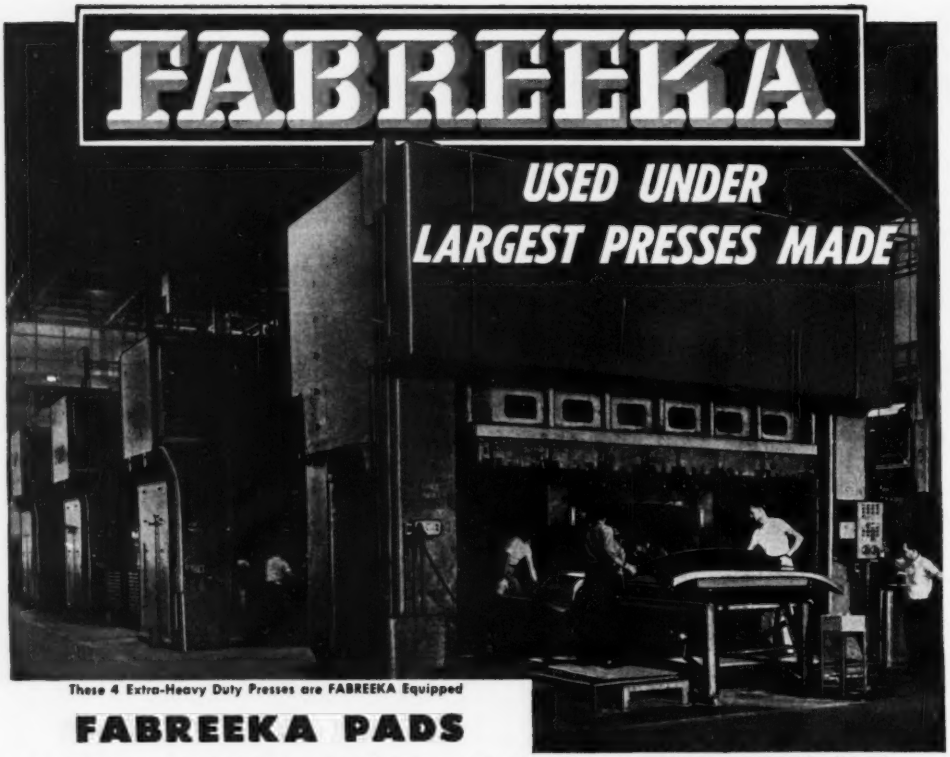

These 4 Extra-Heavy Duty Presses are FABREEKA Equipped

FABREEKA PADS

ABSORB IMPACT SHOCK AND ISOLATE TRANSMITTED VIBRATION

UNDER HUGE PRESSES

HAVING 600 TONS DEAD LOAD RATING

These 200-inch presses are mounted on FABREEKA to protect against shock and vibration. Pads are 28" X 17" X ⅜". Each press weighs one million lbs., and with an average die has a maximum load rating of about 600 tons. The FABREEKA Pads are installed on top of the concrete foundation beneath the press base, and are stressed to 600 lbs. per square inch.

These presses are only one of a wide variety of machines under which FABREEKA Pads are being used successfully to reduce impact shock and vibration.

FABREEKA is designed to give years of service under severe operating conditions.

WHAT FABREEKA DOES AS A MOUNTING FOR HEAVY EQUIPMENT

- Absorbs impact shock and isolates transmitted vibration.
- Insures even distribution of the bearing load.
- Protects Concrete Foundations, preventing chipping and breaking of concrete.
- Prolongs life of machinery and buildings.
- Reduces Noise. Prevents structural fatigue. Helps maintain alignment. Eliminates grouting.
- Reduces maintenance and breakdowns.

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FABREEKA PRODUCTS COMPANY

INCORPORATED

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NEW YORK CHICAGO DETROIT SPARTANBURG

PHILADELPHIA PITTSBURGH OAKLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Manhattan Constr. Co.**, Muskogee, Okla. CA **$1,364,740.** ELECTRONIC BLDG., WICHITA, KAN. Boeing Airplane Co., Wichita Div., Wichita, Kan. CD 10/16, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Refinery Eng. Co.**, Kennedy Bldg., Tulsa, Okla., CA. Approx. **$3,195,000.** design and construct enlarging REFINERY from 3,000 to 10,000 bbls. per day, OKLAHOMA CITY, OKLA., Mercury Oil Co., S. E. 59 and Santa Fe Sts., Oklahoma City 9, Okla. **Awarded Oct. 9.**

▲ **Dallas Power & Light Co.**, Dallas Power & Light Bldg., Dallas, Tex., Purchase and Hire. **$3,500,000.** 1st. unit of Parkdale Electric POWER PLANT, In Southeast Sect. of DALLAS, TEX. CD 10/2/50.

▲ **Sheppard Housing, Inc.**, Const. Bldg., Dallas, Tex., CA. **$4,940,000.** construct, manage, finance, 612 low cost DWELLING units, Proj. FAH No. 113-80004, AF No. 2, WICHITA FALLS, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Awarded Oct. 13. Bids July 13 rejected. CD 7/24, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

November 7, 8 California

STREETS AND ROADS

November 7, 8 California

BIDS ASKED—BUILDINGS

▲ **Calif., San Francisco**—HOUSING—B.A. 11/6—U. S. Eng., 180 New Montgomery St., construct, manage and finance, 500 units of housing, Wherry Act, Presidio of San Francisco, near 25 Ave., Serial No. 121-80004-Army 1. Plans deposit $25. Extended date. Angus McSweeney, 612 Howard St. CD 9/12.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Long Constr. Co.**, Billings, Mont., LB, **$1,598,362** est. $1,297,433., earthwork, lateral lining, pipe lines, and structures for Area P-1, lateral and sublaterals Potholes East canal laterals Schedule 1, Columbia Basin Proj., Spec. DC-3528, WASHINGTON Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Oct. 11. CD 9/26.

▲ **OREGON**—State Hy. Comn., Highway Bldg., Salem, **Guy F. Atkinson Co.**, Cascade Bldg., Portland, Ore., LB. **$1,821,466.** grading 6.07 mi., paving 7.23 mi., Columbia River Hy. FAP-BFI-174 (14), Hood River Co.;

R. A. Heintz Constr. Co., 8101 N. E. Union St., Portland, Ore., LB. **$689,470.** grading 12.4 mi., paving 12.44 mi., 100 ft. concrete road separation, The Dalles-California Hy. FAP BF-120 (2) and BF-126 (2), Klamath Co.;

Heavy Hauling Co., Astoria, Ore., LB. **$238,645,** grading, paving 2.15 mi. Oregon Coast Hy., FAP BF-137 (4), Tillamook Co. Bids Oct. 12. CD 10/3.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,

Frederickson & Watson Constr. Co., and **M & K Corp.**, 873 81 Ave., Oakland, Calif., LB. **$2,551,228,** grading, paving 3.9 mi. Eastshore Freeway between Route 105 and Lewelling Blvd., Alameda Co.,

J. R. Armstrong, 400 Central St., El Cerrito, Calif., LB **$321,818,** grading, surf. portions 3.6 mi. near Danville and Concord, Contra Costa Co.

Thomas Constr. Co., 4820 Hedges St., Fresno, Calif., LB, **$103,662,** grading, surf. replacing drainage structures, widen bridges, etc. between 5.8 mi. south of Merced Co. Line and 8 mi. north of Mendota Fresno Co.,

Eaton & Smith, 1215 Michigan Ave., San Francisco, Calif. LB, **$454,904,** plant mix surf. apply seal coat between 1.9 mi. north of Mariposa and Acorn Inn, Mariposa Co. Bids Oct. 10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Williams & Burrows**, 10 California Dr., Burlingame, Calif. LB, **$2,914,600,** HOSPITAL, north of Castro Rd., between Stanton Ave. and Lake Chabot Rd., SAN LORENZO, CALIF. Eden Township Hospital Dist. 453 Paseo Grand, San Lorenzo, Calif. Bids Oct. 11. CD 9/19.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Cartier Constr. Ltd., Mannix Ltd., Morrison-Knudsen Corp. and McNamara Constr. Ltd.**, Seven Islands Que., CA, Approx. **$5,100,000,** dam, 38,000 cu. yd. concrete, 25,000 hp. power house will serve Seven Islands and facilities of various mills, etc., on the Ste. Marguerite River, Seven Islands, QUEBEC. Gulf Power Co., Clarke City, Que. CD 2/14.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: November 20, 1951

Fox Creek Relief Sewer—Freud Avenue Outlet

DEPARTMENT OF PUBLIC WORKS
CITY OF DETROIT, MICHIGAN
CONTRACT PW-674

THE CONSTRUCTION OF THIS PROJECT HAS BEEN AUTHORIZED AND A CMP ALLOTMENT OF CONTROLLED MATERIALS AND A DO RATING FOR OTHER BUILDING EQUIPMENT AND MATERIALS APPROVED BY THE NATIONAL PRODUCTION AUTHORITY ON OCTOBER 3, 1951.

Sealed proposals for the Freud Avenue Outlet of the Fox Creek Relief Sewer, addressed to the CITY ENGINEER'S OFFICE, DEPARTMENT OF PUBLIC WORKS of the City of Detroit, and endorsed—"Proposal for Contract PW-674", will be received at the OFFICE OF THE CITY ENGINEER, 30TH FLOOR—GUARDIAN BUILDING, until 2:00 p.m. City of Detroit Time, on November 20, 1951, at which time they will be publicly opened and read aloud. Any proposal received after the above-mentioned time will be returned to the bidder unopened.

The work included consists of approximately 1.26 miles of 16 foot inside diameter monolithic concrete cylindrical sewer in tunnel, extending from the existing junction chamber at Jefferson and Manistique via Manistique and Freud Avenues **Pumping Station** at **Conner** Creek, which will be constructed concurrently. Approximately 30 feet of 10 foot inside diameter sewer are required for three station inlet connections.

The Contract Documents, including Notice to Bidders, Form of Proposal and Agreement, Drawings and Specifications, may be examined and copies may be obtained by making a deposit of $15.00 per set which sum will be refunded upon the return in good condition of the complete set of Contract Documents within ten days after receipt of proposals, or if used in submitting a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than 5 percent of the total bid price as security for the acceptance of the Contract.

After the scheduled closing time for receipt of bids, no proposal may be withdrawn for at least 45 days.

The City of Detroit reserves the right to waive any informality in any bid, or to accept any bid, or to reject any or all bids, should it be deemed for its best interests so to do.

CITY OF DETROIT
CARL D. WARNER,
Commissioner of Public Works
G. R. THOMPSON,
City Engineer

Bids: November 14, 1951

Ramapo Pumping Station

Sealed proposals will be received from 2:00 P.M. to 2:10 P.M., Eastern Standard Time, on November 14, 1951 by the North Jersey District Water Supply Commission in its office, Wanaque Headworks, Wanaque, New Jersey, and publicly opened and read at the last named hour for the performance of all the necessary work required under the following contract:

RAMAPO PUMPING STATION

Contract 57. Pumps, Motors, Piping, etc.

Furnish and install bar screens, sluice gates, screen chamber equipment, 78-inch steel penstock, 72-inch steel header, piping, 25 MGD Pumps, 700 H. P. synchronous motors, 7½ ton traveling crane, gate and cone valves, etc.

Form of proposal, form of contract, specifications and drawings may be examined in the office of the Commission or may be obtained at the said office upon deposit of $35.00 per set. The full amount of deposit will be refunded to persons or firms submitting a bid when plans are returned, and all other deposits will be returned, (less $20.00, which is the actual cost of the documents) upon return of plans and specifications in good condition within thirty days after the date of opening of bids.

All bids shall be made on the blank form in the book of specifications, which provides for a detailed statement as to the bidders experience and resources as well as the price for which he will execute the work.

Each proposal must be accompanied by a consent in writing of a surety company qualified to do business in New Jersey, binding itself to indemnify the Commission against any losses due to the failure of the person or persons making said proposal to properly execute the contract in case it be awarded to him or them, and binding itself that if the contract be so awarded the said surety company will become surety for the full and faithful performance of the same in an amount equal to 100 per cent. of the contract price and, through an additional obligation, will also become surety in the sum of 100 per cent. of the contract price, for the protection of all persons furnishing materials or labor for fulfilling this contract in accordance with Revised Statutes of New Jersey 2:60-207 to 211 inclusive.

CERTIFIED CHECK

No bid will be considered unless accompanied by a certified check upon a National or State Bank or Trust Company, drawn and made payable to the order of the North Jersey District Water Supply Commission in the amount of twenty thousand dollars ($20,000.00) as a guarantee.

All bids submitted shall be irrevocable for any reason whatsoever.

The Commission reserves the right to accept any bid deemed advantageous or to reject all proposals or any proposal which may be informal, the acceptance of which, in the judgement of the Commission for the reasons as suggested in information for bidders or for any other reason, would be detrimental to the interests of the municipalities for which the work is to be done.

By order of the North Jersey District Water Supply Commission of the State of New Jersey.

WILLIAM P. FURREY, Chairman
Attest: George V. McDonough, Secretary

Bids: December 6, 1951

Refuse Incinerator

CONTRACT NO. E51-89

Sealed proposals will be received at the office of the Purchasing Agent, City of Hartford, Municipal Building, 550 Main Street until 2:00 p.m., E.S.T., December 6, 1951 for:

Construction of a Refuse Incinerator in the North Meadows.

Each bid must be accompanied by bid security in the amount of one hundred thousand dollars ($100,000) payable to the City of Hartford, said bid security to be returned to the bidder as provided unless forfeited under conditions stipulated. The bid security should be enclosed with the bid.

A satisfactory performance bond for 100% of the contract price will be required of the successful bidder.

Contract drawings, forms for porposal and bid bond, forms of contract agreement and performance and specifications may be examined at office of Metcalf & Eddy, Engineers, 1300 Statler Building, Boston, Massachusetts, and examined and obtained at the office of the City Engineer, Municipal Building, Hartford, Conn.

A deposit of one hundred dollars ($100) will be required on each set of drawings and contract documents taken. Such deposits will be refunded upon the return of said drawings and documents in good condition within 30 days after the date of the opening of bids.

Bids may be withdrawn at any time prior to the designated time for the opening of bids. No bid may be withdrawn within 30 days after the actual date of the opening thereof.

The right is reserved to reject any and all bids not deemed to the best interest of the City.

CITY OF HARTFORD
By N. B. Henson
Purchasing Agent

OFFICIAL PROPOSALS

Bids: November 26, 1951

Water Treatment Plant

CITY OF LONG BEACH, N. Y.

1. Sealed Proposals for the construction of the herein described Contracts for a Water Treatment Plant in the City of Long Beach, New York, will be received by the City Manager until 2:30 o'clock, P.M., E.S.T., November 26, 1951, in his office in City Hall, Long Beach, New York, and there publicly opened and read immediately thereafter.
2. The work will consist of providing all labor, materials, equipment and incidentals required for the construction of the following:
CONTRACT I—GENERAL CONSTRUCTION; WATER TREATMENT PLANT (Building, Equipment Items, Miscellaneous, Piping, Drains, etc.)
CONTRACT II—HEATING, VENTILATING AND PLUMBING WORK required for Treatment Plant.
CONTRACT III—ELECTRICAL WORK required for Water Treatment Plant.
3. Plans, Specifications, bidding and contract documents may be examined at the office of the Consulting Engineers, Alexander Potter Associates, 50 Church Street, New York 7, N. Y., and at the Office of the City Engineer at City Hall, Long Beach, N. Y., and obtained from the latter upon the following deposits per set:
CONTRACT I—Water Treatment Plant, General Construction, $25.00
CONTRACT II—Heating, Ventilating and Plumbing Work, $10.00.
CONTRACT III — Electrical Work, $10.00.
Full refund will be made to actual bidders for return of one (1) set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty percent (50%) of the deposit.
4. All proposals must be on the form contained in the specification as furnished by the City.
5. All bids must be accompanied by a Certified Check or Acceptable Bidder's Bond in the amount of Ten (10%) percent of the amount of the Bid, made payable to the City Treasurer, City of Long Beach. Said checks will be returned to all, except the three (3) lowest bidders, not later than ten (10) days after opening of bids.
6. The successful bidder in each of the several contracts will be required to furnish a Performance Bond conditioned upon the faithful performance of the contract and upon the payment of all persons supplying labor and furnishing materials on the construction of the work.
7. No bidder may withdraw his bid within thirty (30) days after closing date for receipt of bids.
8. The City Council reserves the right to reject any or all bids and to waive any informality in the Bid, and to accept that proposal which in its judgment best serves the interests of the City.
CITY OF LONG BEACH, N. Y.
By: MAURICE J. FLEISCHMAN
City Manager
Dated: October 16, 1951

Bids: November 1, 1951

Highway Road Work

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 23, SECTION 4B
Construction of Route 23, Section 4B, from Charlottesburg to Smith Mills; Grading, Bridges and Paving Eastbound Roadway, West Milford Township, Passaic County, and Borough of Kinnelon, Morris County, Federal Project No. F-46(2). Length 2.572 miles. The principal items of construction are:

Roadway Items

Estimated:
124,818 cu. yds. Roadway Excavation—Earth
10,385 Cu. yds. Roadway Excavation—Rock
334,106 cu. yds. Borrow Excavation
7,000 cu. yds. Channel Excavation
20,629 cu. yds. Stone Shoulders
8,707 sq. yds. Waterbound Macadam Base
8,707 sq. yds. Waterbound Macadam Inter. Course
1,060 tons Pavement Type MA-BC-1
31,649 sq. yds. 10" Rein. Conc. Pavement
5,583 lin. ft. Rein. Conc. Pipe—various sizes
1,846 lin. ft. Corrugated Metal Culvert Pipe—various sizes
83 Inlets
15,825 lin. ft. Concrete Curbs
1,592 lin. ft. Railroad Track
75,687 cu. ft. Concrete Cribbing
496 lin. ft. 48" Rein. Conc. Pressure Pipe
700 Trees—Deciduous & Evergreen
4,500 Shrubs, Vines & Ground Cover

Bridge Items

7,454 cu. yds. Concrete in structures
647,850 lbs. Reinforcement Steel in Structures
4,068 sq. ft. Waterproofing

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Thursday, November 1, 1951, at (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and suplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Fulton and Paterson Streets, Paterson, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: January 9, 1952

Wadema Tunnels

THE HYDRO-ELECTRIC COMMISSION, TASMANIA.

The Commission is inviting Tenders for the construction of three tunnels in connection with hydro-electric projects on the River Derwent Catchment area in Tasmania.

(a) Wayatinah Tunnel: Cross section 470 sq. ft., length 21,500 ft. Time for completion—40 months.
(b) Dee Tunnel: Cross section 124 sq. ft., length 10,500 ft. Time for completion—24 months.
(c) Mossy Marsh Tunnel: Cross section 119 sq. ft., length 5,250 ft., or alternatively cross section 130 sq. ft. and length 7,920 ft. Time for completion—24 months.

The work required includes excavation mainly in hard rock, the open-cut portals, and concrete lining where necessary.

The successful tenderer will be required to bring his plant and most of his labour from sources outside Tasmania.

The contracts will be on a schedule of rates basis and may be awarded as one to a single tenderer or separately to two or more tenderers.

Consideration will be given only to tenders from firms having proved experience in this class of work.

Particulars and the tender documents may be obtained from the undersigned, and applications should be accompanied by a preliminary deposit of £100 Australian, which is returnable on receipt of a bona fide tender. This preliminary deposit formality may be waived in the case of applications received from firms of standing and repute. A set of the tender documents is available for inspection only at the offices of the Australian Trade Commissioner, 630 Fifth Avenue, New York, N. Y.

Sealed tenders, endorsed on the cover "WADEMA TUNNELS" are to be delivered to the undersigned by noon on Wednesday the 9th day of January, 1952.

The Commission does not bind itself to accept the lowest or any tender.

W. R. Spinner,
Secretary
The Hydro-Electric Commission,
Hobart,
Tasmania.

Bids: November 14, 1951

Improvement to Water Purification Plant

CITY OF NORFOLK, VIRGINIA

Proposals will be received by the Department of Public Works, Room 303, City Hall, Norfolk, Virginia, for improvements to the 37th Street Water Purification Plant and other work until 12 noon, E.S.T., Wednesday, November 14, 1951 at which time and place they will be publicly opened and read.

Bids shall be enclosed in two envelopes. The inner envelope shall be endorsed "Bids for Improvements to the 37th Street Water Purification Plant Contract No. 11" and shall also be marked with the name of the company and the Virginia contractor's license number. The outer envelope shall be addressed to the Department of Public Works.

The work embraces modification of piping, clear well basin, additional pumping units, chlorine handling system, chemical handling system, building services, control gates, rate controllers, rearrangement of railroad siding and additions and alterations to the plant building structure.

Each bid shall be accompanied by a certified check in the amount of Twenty-Five Thousand Dollars ($25,000.00) made payable to Alex H. Bell, Treasurer of the City of Norfolk, Virginia.

Drawings and Specifications may be obtained from the office of the Department of Public Works of the City of Norfolk, or from the office of Whitman, Requardt and Associates, 1304 St. Paul Street, Baltimore 2, Maryland, upon deposit of Twenty-five Dollars ($25.00) for each set of drawings and specifications, which deposit will be returned upon return of the plans and specifications in good condition.

The Department of Public Works reserves the right to reject any or all bids and to accept the bid which in their opinion best serves the interests of the City.

H. H. George, 3rd
Director of Public Works

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-220 for furnishing labor and materials and performing all work for the construction of Casper-Alcova telephone line, Kendrick Project, Wyoming, will be mailed to P. O. Box 280, Casper, Wyoming, or delivered to the office of the Bureau of Reclamation in time for the public opening at 10 a.m., Mountain Standard Time, October 30, 1951, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the Specifications and drawings furnished for bidding purposes; for all other $0.25 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

SEARCHLIGHT SECTION

OFFICIAL PROPOSALS

Bids: November 1, 1951

Bridge Over Jakes Branch

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 4, SECTION 22, BRIDGE OVER JAKES BRANCH

Construction of a bridge over Jakes Branch on Route 4, Section 22, in the Borough of South Toms River, Ocean County. The principal items of construction are:

Estimated:
384 cu. yds. Concrete in Structures
32,330 lbs. Reinforcement Steel
2,560 lin. ft. Timber Piles

Bids for the above will be received at the office of the State Highway Department, Assembly Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Thursday, November 1, 1951, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: November 26, 1951

Distribution Reservoir

Bids will be received by the City Manager of the City of Newburgh, New York until 2 P.M., November 26, 1951 at the Office of the City Manager, City Hall, 81 Broadway, Newburgh, New York, for constructing a distribution reservoir and appurtenances.

Copies of the plans and specifications may be obtained either from the Department of Water, City of Newburgh, Du Bois and Carter Streets, Newburgh, N. Y. or from Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, N. Y. upon deposit of $25.00 which will be refunded if the plans and specifications are returned in good condition within ten days of the date of receipt of bids.

The work to be done includes constructing a reinforced concrete distribution reservoir approximately 137 feet by 91 feet in plan and 23 feet deep together with a gate chamber, piping, grading and appurtenances; a connecting pipe line of 12" and 20" cast iron pipe approximately 1,000 feet long and a drain line of 21" tile pipe approximately 300 feet long.

Each proposal must be accompanied by a certified check or bid bond in amount equal to 25% of the proposal.

The right is reserved to consider bids for 30 days before awarding any contract, to accept any bid or to reject any or all of them.

FRED D. BAYNE, City Manager
City of Newburgh, New York
Newburgh, N. Y., October 25, 1951

OFFICIAL PROPOSALS

Bids: November 7, 1951

Electric Lighting Equipment

CONTRACT 357

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A. M., Eastern Standard Time, on Wednesday, November 7, 1951, for Contract 357, for furnishing, delivering, installing and testing electric lighting equipment, for the West Branch and Kensico south effluent chambers and the Kensico comfort stations of the Delaware aqueduct, all as set forth in the specifications. The locations of the proposed work are in the Towns of Carmel, Putnam County, and Mount Pleasant, Westchester county, New York.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of one thousand eight hundred dollars ($1,800.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1211, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: November 15, 1951

FOUNDATIONS AND MISCELLANEOUS STRUCTURES
NORTHEAST STATION
FOR THE
DEPARTMENT OF WATER SUPPLY
CITY OF DETROIT, MICHIGAN

CONTRACT NO. NE-2

Sealed proposals for the construction of Foundations and Miscellaneous Structures for the Northeast Station, on a 64 acre site at 11000 East Eight Mile Road, will be received by the Board of Water Commissioners of the City of Detroit. Proposals shall be addressed to the Board of Water Commissioners, City of Detroit, Room 506 Water Board Building, 735 Randolph Street, Detroit 26, Michigan and shall be endorsed "Proposal for Contract No. NE-2". Proposals will be received until 10:00 A.M. Eastern Standard Time, November 15, 1951, at which time they will be opened and read aloud in the Board Room, Fifth Floor, Water Board Building, 735 Randolph Street, Detroit 26, Michigan.

Included in the work is the construction of reinforced concrete foundation slabs for the Filter Building, Wash Water Building, Weir Chamber, Switch House, Gate Well Chamber, the High Lift Plant and Raw Water By-pass Chamber (slabs and some walls), the Filtered Water Conduits, Filtered Water Junction Chamber No. 2, various drain lines with appurtenances and an electrical grounding system. The total plan area of the foundation slabs exceeds 141,000 square feet. The foundation slabs, generally, are to be constructed on cast-in-place concrete end-bearing piles, the base lengths of which are established as 104 linear feet with the total number required in excess of 4600. The foundation slabs and other structures and drains are to be made in excavations, included in this Contract, at depths of from 18 feet, approximately, to 29 feet, approximately, below existing site grade.

The Contract Documents, including the Notice to Bidders, the Forms of Proposal and Agreement, the Specifications, and the Contract Drawings, may be examined during business hours, at the office of the Department of Water Supply, Room 706 Water Board Building, Detroit, Michigan. The Contract Documents may be obtained by making a deposit of Twenty-Five Dollars ($25.00) per set, which sum will be refunded upon the return of the complete Contract Documents in good condition within thirty (30) days after the bid date, or if used in making a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than five per cent (5%) of the total lump sum price bid, drawn payable to the City of Detroit, Board of Water Commissioners, as security for the acceptance of the Contract.

No proposal may be withdrawn for at least sixty (60) days after the scheduled closing time for receipt of bids.

The Board of Water Commissioners reserves the right to waive any informality in any bid and to accept any bid, or to reject any or all bids, should it deem it to be in the best interests of the City of Detroit so to do.

CITY OF DETROIT
BOARD OF WATER COMMISSIONERS
R. K. Williams, President
Oscar Wagner, Vice President
George A. Shaffer
Alfred J. Simpson
L. G. Lenhardt, Superintendent,
General Manager and Chief Engineer
E. H. Bauer,
Acting Secretary

Bids: December 11, 1951

San Jacinto River Dam

HOUSTON, TEXAS

Sealed bids, in duplicate, will be received by the City Secretary of the City of Houston, until 3:00 p.m. C.S.T., Tuesday, December 11, 1951, and all bids will be opened and publicly read in the City Council Chamber at 3:15 p.m. on that date, for constructing the

SAN JACINTO RIVER DAM, INTAKE AND 72 INCH REINFORCED CONCRETE CONDUITS

The dam consists of an Amubursen Type reinforced concrete slab-and-buttress spillway 3160 feet long and 47 feet high, with earth embankments at each end. The following approximate quantities are required for the principal items:

80,000 c.y. Stripping
46,000 c.y. Core trench excavation
860,000 c.y. General excavation
50,000 c.y. Trenching, and finishing excavation
18,000 c.y. Backfill
360,000 c.y. Embankments, Impervious
755,000 c.y. Embankments, Pervious
250,000 c.y. Embankments, Unclassified
12,000 c.y. Topsoil
73,000 c.y. Reinforced concrete in foundation floors, mats, and paving
55,000 c.y. Reinforced concrete in buttresses, piers, deck slabs, abutments and structures
40,000 c.y. Gravel fill
4,000 c.y. Rockfill
2,000 c.y. Oyster shell road surfacing
6,500 tons Steel sheet piling
7,000 tons Reinforcing steel
20,000 sq. ft. premolded joint filler
3,600 lbs. copper water seals
2 Steel Tainter gates
2 Hinged steel flashboards
4 Electric gate hoists
1 Steel foot bridge
1 Intake tower, complete
1,150 Lin. Ft. dual 72" reinforced concrete conduit

The City has already purchased and will supply to the Contractor all miscelleaneous steel and metallic items as follows: all reinforcing steel, cut and bent; all steel sheet piling; 2 Tainter gates and 2 steel flashboards, fully fabricated; 4 complete gate hoists with motors; 3 sluice gates and operating mechanisms with fabricated steel racks; all pipe rail, completely fabricated; steel foot bridge, completely fabricated; all miscellaneous and structural steel items required for dam intake tower and conduits completely fabricated.

The City has received a CMP allotment.

The plans, specifications and bidding documents may be secured from the office of the Director of the Utilities Department, City Hall, Houston, or from Amburgen Engineering Corporation, 295 Madison Avenue, New York or M & M Building, Houston, Texas.

Bids must be made on the standard proposal form, in duplicate, and must be accompanied by Cashier's check or Bidder's Bond in an amount equal to 10% of the total maximum bid price.

The City reserves the right to reject any and all bids, or to accept any bid deemed advantageous to it.

A deposit of $50 is required for each set of plans and specifications, which will be refunded in full upon their return in good condition within 15 days after date of bidding.

M. H. Westerman
City Secretary

October 17, 1951

ENGINEERS

Chemical - Mechanical - Piping - Process

Long term openings in permanent offices located at Cleveland, Ohio and Frederick, Maryland offering good salary plus overtime (forty eight hour week) for qualified Engineers, Group Leaders and Designers experienced in one or more of the following phases of industrial plant design:

Process Piping	Plumbing	Heating and Ventilation
Instrumentation	Tanks and Vessels	Refrigeration
Process Equipment Layout	Boiler Houses	Sprinklers
Packaging	Plant Layout	Water Treatment
Air Conditioning	Conveyors	

Limited number of openings for Estimators experienced in Mechanical and Chemical installations as well as building construction.
Also have a number of openings in our Cincinnati and New York City offices for similar type personnel.

Excellent working conditions with paid vacations, sick leave plan and participating Group Insurance Program.
Please submit complete resume stating experience, education, salary required and date available to:

The H. K. FERGUSON COMPANY
Engineers and Builders
FERGUSON BUILDING — CLEVELAND 14, OHIO

Civil or Sanitary Engineer	**$5600—$6500**
Civil or Sanitary Engineers	**4500— 5400**
Construction Engineers—Inspectors	**3000— 4000**
Engineering Aides	**2700— 3600**

Permanent positions, expanding department in most rapidly growing community in Washington, D. C. Metropolitan Area. Write Office of Sanitary Engineer, County of Fairfax, Fairfax, Virginia for information and application forms.

Rare Opportunity

CONTRACTORS ESTIMATING AND BIDDING ENGINEER

Nationally known Southwestern firm constructing dams, locks, tunnels, bridges desires engineer—graduate preferred—with 8 to 14 years heavy construction experience in field and office to work into position of company representative on bidding and joint ventures. Knowledge of costs, plant layout, scheduling and equipment performance essential. Applicants with pleasing personality, good appearance and possessed of a high degree of business acumen favored. Give full physical and personal characteristics — recent photo if available — detailed experience record of past employment, duties and salary, and references who may be contacted.

P-2251, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS
WANTED

The Tennessee Valley Authority wants Civil, Structural, Mechanical, Electrical, and Office Engineers and Estimators. The work is design and construction of large steam-electric and hydroelectric projects and transmission systems. Salaries start at $3200, $3900, and $4650 for 40-hour week. Some work is scheduled more than 40 hours and pays overtime. All jobs carry automatic within-grade increases for satisfactory service, liberal vacation leave, sick leave, and retirement benefits. Design and estimating jobs are in Knoxville and Chattanooga, Tennessee. Field and office engineering jobs are at construction sites in the Tennessee Valley area and at Paducah, Kentucky.

Write the

Tennessee Valley Authority
Division of Personnel
Knoxville, Tennessee

ENGINEERS DESIGNERS

. . . with qualifying design experience in Chemical Processing, Steam or Hydro Plants, Petroleum Refining or related heavy industry.

Assignments in
SAN FRANCISCO — LOS ANGELES

For information write
BECHTEL CORPORATION
220 Bush Street
San Francisco, California

WANTED

DESIGNERS, DRAFTSMEN
PIPING AND MECHANICAL

for long term job in Southern Ohio. Steel mill design experience desirable but not necessary. Good working conditions and housing. Moving expenses paid for men and families who qualify.

P-2262, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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Courses of instruction by mail. Forty-first year
Information sent without obligation. Write today.

WILSON *Engineering Corp.*
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CONSTRUCTION SUPERVISOR

Civil Engineering Graduate with at least 10 years construction experience in Reinforced Concrete. Permanent position with established firm specializing in Prestressed Concrete Construction. Travel out of New York City office throughout eastern U. S. Salary $8,000-$10,000. Submit complete resume of experience.

P-2283, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

CONSTRUCTION ENGINEER: To take charge of entire construction program of Consulting Engineering firm. Work involves mainly water, sewer and sewage treatment projects aggregating about $1,000,000 a year. Permanent position with view to eventual interest in firm. Salary open. Location upstate New York. P-2230, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT. Permanent position. Must be top grade building construction management man with extensive industrial and monumental project experience. Nationally prominent construction company established over 50 years offers good opportunity to right man. Our Personnel know of this ad. A complete experience record is desired. Address Box P-2079, Engineering News-Record.

DETAILER AND Checker—Experienced in making and checking shop details for steel fabrication plant. All types of steel construction. State experience, references, and rate expected. Savannah Machine and Foundry Company, P. O. Box 590, Savannah, Georgia.

ELECTRICAL EXECUTIVE familiar with all phases of large Electrical Contracting business who from past experience in similar executive capacity is capable of becoming Executive Manager of a Corporation successfully established locally and semi-nationally installing large industrial and power systems with an excellent past record. Registered Engineer preferred. Owner desires eventual retirement. North Central location. A very unusual offering and a life time opportunity to the right party. State personal, educational and experience facts fully. Confidential and agreeable financial arrangement understood. P-2139, Engineering News-Record.

FIELD ENGINEER. Permanent position. Desired for nationally prominent construction company. Man desired must have had heavy experience on layout work for foundations and building interiors. When replying, forward complete experience record. Address Box P-2080, Engineering News-Record.

HEATING AND Refrigeration Engineer wanted. Must be capable of handling mechanical layout, design, and supervision of such installation. Locations of offices served are Racine, Wisconsin; Waukegan, Illinois; Lake Forest, Illinois; and Evanston, Illinois. Pay commensurate with ability. The firm is one of the largest plumbing, heating and refrigeration companies between Chicago and Milwaukee, and is expanding its services yearly. Stiles & Horne, Inc., 648 North Western Ave., Lake Forest, Illinois.

NEW JERSEY Crushed stone, sand gravel and bituminous concrete producer requires assistant in Engineering Dep't. Splendid opportunity for advancement. Write stating qualifications. P-2208, Engineering News-Record.

WANTED IMMEDIATELY: Superintendent or assistant superintendent thoroughly experienced to supervise large draglines, dozers, drilling equipment and dynamiting on large canal and levee project. Must have the push for guaranteed yardage output monthly. Permanent position if qualified. Write to Box Number P-2061, Engineering News-Record.

THE TECHNION (Institute of Technology), Haifa, Israel proposes to make further appointments in the division of Hydraulics; and to appoint associate Professors of Civil Engineering, with special qualifications either in buildings and structures or in public works. Applicants should have first-rate professional and academic qualifications, be willing to integrate themselves into the life of the country and, in due course, to teach in Hebrew. Applications with full details should be sent, for transmission to Haifa, to: The American Technion Society, 154 Nassau Street, New York 38, N. Y.

(Continued on page 92)

DESIGNERS

We need men with experience as:

Structural Designers
Concrete Designers
Electrical Designers
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Men should have experience in Blast Furnaces, Steel Mill, Oil Refinery or other Heavy Structural Design.

Positions available in our offices at Cleveland, Ohio and Union, New Jersey.

We pay among highest rates plus annual profit-sharing bonus.

Our continuous expansion and growth offers many fine future opportunities.

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Fire Protection ENGINEERING

An expanding field with a top-flight organization.

RECENT GRADUATES

Wanted to train as fieldmen. Send personal resume to:

P-1783, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

We Need
POWER PLANT ENGINEERS
for Staff Positions

- RESIDENT ENGINEERS
- ELECTRICAL ENGINEERS
- STRUCTURAL ENGINEERS
- MECHANICAL ENGINEERS
- CONSTRUCTION SUPERINTENDENTS

If you are a Power Plant Engineer with considerable recent experience in design or construction of central station steam or hydro-electric plants, you may be qualified for a position on our staff.

To that type of engineer we offer a substantial position with salary commensurate with ability and experience. If you are interested in such a position and feel that you are qualified, send a resume of your experience to us.

P-2041, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

PLANT MAINTENANCE ENGINEERS

Experienced in plant maintenance. Technical graduate preferred. Experience in chemical plants beneficial. Regular full-time positions in central and eastern U. S. locations. First letter must give full details of experience, age, salary expected, and when available for work. Write **Box ENR, 1515, 221 W. 41 St., N. Y. 18.**

ESTIMATOR

Permanent position for a man approximately 35 years old with large Pittsburgh General Contracting firm. Must be thoroughly experienced in Commercial, Industrial, and Institutional building construction. Equal emphasis is placed on pricing as well as quantity takeoff. Salary limited only by applicant's ability and experience. Submit information stating experience, education, age, and availability. Replies confidential.

P-2153, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

CONSTRUCTION SUPERINTENDENTS AND ENGINEERS

Large chemical company requires construction superintendents and engineers for regular full-time positions in central and eastern U. S. locations. Chemical plant experience beneficial. Full details of exp, age, salary expected, and when available for work must be given in first letter. Write Box ER-1523, 221 W. 41 St., N Y 18.

STRUCTURAL ENGINEER

With 10 to 15 Years Experience in Reinforced Concrete and Structural Steel Design for Electric Utility Work. Write to

STRUCTURAL ENGINEER
PENNSYLVANIA POWER & LIGHT CO.
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SALARIED POSITIONS $3,500—$35,000

We offer the original personal employment service (established 41 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc., 272 Ellicott Bldg., Buffalo 2, N.Y.

(Continued from page 90)

POSITIONS WANTED

BUILDING CONST. Executive, 30 years experience. Thoroughly understand Estimating, Sub-letting, Purchasing and Office work. Desires position of responsibility. Box PW-2218, Engineering News-Record, 330 W. 42 St., NYC.

CIVIL ENGINEER, age 30, presently employed in staff capacity, desires responsible position with commensurate salary. Excellent background in Plant engineering and maintenance, engineering administration and procedures, design coordination, resident engineering, contracts, specifications, construction supervision and office management. PW-2270, Engineering News-Record.

CIVIL ENGINEER—Assoc. M. ASCE; registered Three states; C.E. degree; 42; married; 17 years experience in industrial plant planning, layout, design and supervision of construction, institutional building design, estimating and specifications; plant engineer's office supervision and management. Prefer south or midwest. Available in sixty days. PW-2232, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, 46, 22 years experience heavy construction—Bridge foundations, powerhouses, floodwalls, cofferdams and highways. Familiar with all heavy equipment. Employed but desire change. PW-2269, Engineering News-Record.

MECHANICAL INSTALLATION Specialist and General Construction superintendent widely experienced on Hydro-Electric, Chemical, Mining and General industrial plants. U. S. citizen now employed in Canada seeking employment in U.S.A. PW-2076, Engineering News-Record.

PROJECT MANAGER or Engineer. Thirty-five years experience in design and construction of power plants, steel mills, sugar mills and heavy industrials. Successful record in contract negotiations, client relations and management of engineering and construction organizations. Now employed, available shortly for a position of long duration and responsibility at top salary. PW-2115, Engineering News-Record, 330 W. 42 St., N.Y.C.

PROJECT MANAGER or General Supt. 25 years experience in Bridge, Tunnel and Heavy Construction; both estimating and performance. Interested in salary and bonus proposition. Have following for work in Middle Atlantic States. PW-2171, Engineering News-Record.

REGISTERED ENGINEER available, age 49. Thoroughly experienced in supervision of design and construction of bridges and industrial buildings. Present salary $9600. PW-2170, Engineering News-Record.

SUPERINTENDENT—FIFTEEN years experience in heavy construction. Specialized in Heavy Blasting, Earth Moving and Mass Concrete. PW-2229, Engineering News-Record.

SUPERINTENDENT, 25 Years diversified heavy construction experience — bridges, dams, disposal plants, pumping stations, concrete structures, sewer and water systems, heavy excavation rock and soil, water front work, etc. Good organizer, know men and equipment, familiar with labor and material cost and distribution. Good background. Location immaterial. PW-2216, Engineering News-Record.

SELLING OPPORTUNITY WANTED

REINFORCED CONCRETE supt. Building & Heavy constr. Leaving Jan. 1 for Capetown to represent American interests. Will introduce other non-competitive equip. & products, arranging contacts with S. African distributors. Virgin, field for metal lath & new plaster products. RA-2027, Engineering News-Record.

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Tel. PLAZA 7-3819

PATENT ATTORNEY

CONSULT: Z. H. POLACHEK.
Reg. Patent Attorney, 1234 Broadway, New York 1, N. Y.

WANTED

ANYTHING within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

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Approx. 10 Acres Desirable Industrial Property Immediately Available
Fronts on Southern Ry. and State Highway
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BO-2281, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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Small, active civil engineering practice. Contracts and active projects in process. Equipped and staffed for immediate operation. All inquiries held absolutely confidential. Location—Iowa.

BO-2231, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

OPEN CAPACITY
2,000 tons per month
STRUCTURAL STEEL FABRICATION

Large eastern structural steel fabricator with capacity of 2,000 tons per month has immediate open capacity for fabrication of structural steel or structural shapes, weldments, trusses, plate girders—riveted or welded, beams, columns. Materials to be supplied by you. Send blue prints or inquiries for quick action

CW-2228, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

WANTED

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WHEN IT IS WINTER IN THE U. S. IT'S SUMMER IN SOUTH AMERICA!

If you have any new or nearly new tractors or road building equipment for sale, as well as parts, please write us.

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LI 2034 KE 6229

WANTED
OVERHEAD BRIDGE CRANE
with or without runway
3 ton, span 40-60 feet, 3 motors 3 phase A.C. will consider monorail crane
ANDREW CARLSON & SONS, INC.
KINGS PARK, N. Y.

WANTED TO BUY FOLLOWING STRUCTURAL STEEL

4 pcs. 21" WF x 59 lb. x 35'
5 pcs. 21" WF x 59 lb. x 26'
1 pc. 21" WF x 59 lb. x 20'
16 pcs. 18" WF x 37 lb. x 35'
6 pcs. 6 x 6 H beams x 18 lb. x 14'

WILLIAMS CONSTRUCTION CO.
Box 145 Middle River, Baltimore 20, Md.

WANTED

Portable Conveyor—40'—Gas. Also—Semi-Trailer with dump body and hoist (Approx.) 12 Cy., air-brakes.

DAVID RHODES
Box 314 Chester, N. Y.

L.B.SMITH INC.

OFFERS

AIR COMPRESSORS

Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Gardner-Denver 160 cubic foot gas powered compressor on 4 steel wheels.
Worthington 210 cubic foot, two-stage, air-cooled, on steel wheels with Hercules diesel.
Pennsylvania 13" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

QUARRY EQUIPMENT & BINS

Cedarapids 2036 AAA unit with feeder, etc.
Cedarapids Jr. Tandem roll & jaw unit.
3033 Cedarapids Hammermill, Rebuilt.
10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
4' x 8' Kennedy Van Saun single deck.
4' x 8' Kennedy Van Saun double deck.
42" x 24' revolving screen.
16" x 90' bucket elevator.
80-ton, 2-compartment, 8'x18' storage bin with clamshell gates.
Conveyors—18"—24"—30"—36". Also belt.

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1½-ton Ford with any body.
2½-ton GMC, rebuilt.
1949 White Model WC26 dump trucks, new condition.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.
2,000 gallon tanks on semi-trailer mounting.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

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Buda, Hercules, Hill diesels, rebuilt.
New and rebuilt Murphy diesels, ME-4 & 46.
GM 6 and 12 cylinder diesels, practically new.

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Lorain L-50, 1-yd. diesel.
L-41 diesel powered ¾-yd shovel, rebuilt.
Brownhoist 1-yd. gas shovel and crane.
Universal truck crane.

SHOVEL & CRANE ATTACHMENTS

Lorain 40A shovel attachment complete.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
Lorain 80-820 fairleads.

Backhoe Buckets & Attachments

Lorain 30 hoe attachment complete.
¾-yd Lorain, 40, LBS #8105, 44" cutting width.
28" outside width solid bottom type LBS #4377, good condition.
¾-yd Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

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McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #8600, rebuilt.
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Bucyrus-Erie 1¼-yd gas air, LBS #3782, fair.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
Lorain 75B, 1¾-yd extended lip, 1¾-yd LBS #2250.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS #5763.
Esco 2½ yd cast weld dipper with bail & teeth

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Carr formgrader, new 1944, rebuilt.

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Sanderson-Cyclone #42 well drill, new.
Sanderson-Cyclone #44 well drill, new.
Bits—Stems—Bailers—Sockets—Etc.

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New Layne Bowler type 18 deep well pump.
Used and rebuilt pumps, all sizes, gasoline, electric or diesel.

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Austin Western 77 tandem drive, scarifier, 12' blade, gas power, hydraulic controls.

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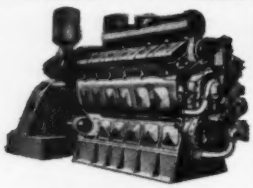

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KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	33F16	2000	300	375	Enterprise	DSG-6	450	450
1420	Fairbanks Morse	38D8⅛	1600	720	330	Superior	RNA	396	514
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12¼x13T	750	600	125	General Motors	3-268A	150	1200
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676 ft. Worthington, 2 Stage, 440 V.
1302 ft. Ingersoll Rand PRE-2, 2300 V.
1578 ft. Sullivan WN-31, 2300 V.
2415 ft. Ingersoll Rand PRE-3, 2300 V.
2800 ft. Sullivan WN-4, 440 V.
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3100 ft. Sullivan WN-4, 2300 V.
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50 TON ELEC. GANTRY WHIRLEY CRANE

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48 in. Telsmith Gyrasphere Crusher.

3 LIMA 1201

3 Lima Diesel Crane, Shovel, Draglines.

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SUBJECT TO PRIOR DISPOSITION

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Lima Type 1201 Loading Shovel, 3½ c.y. Dipper, 28 ft. stick. New 1946. Located Mountain Iron, Minnesota.

Price $37,500

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Manitowoc model 2000B 1¼ c.y. Combination standard shovel and dragline with Caterpillar D-13000 diesel. Good condition.

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1—P&H-255A—¾ yd. Crawler Shovel-Hoe-Crane, Gas Power, Late Model.

1—Bay City, Model 45, ¾ yd. Crawler Shovel, Hoe or Crane, Diesel Power, practically new.

1—Northwest, Model 25, ¾ yd. Crawler Shovel, gasoline power. Rebuilt.

1—Lorain, Model 40, ¾ yd. Crawler Crane, gasoline power. Rebuilt.

1—Byers, Model 83, ¾ yd. Crawler Hoe or Crane, gasoline power. Rebuilt.

1—Marion, Model 331, ¾ yd. Crawler Shovel, or Crane, gasoline driven. Rebuilt.

1—General, Heavy Duty, ½ yd. Crawler Shovel, Hoe or Crane, gasoline power. Rebuilt.

1—Bay City, Model 25, ½ yd. Crawler Shovel, Hoe or Crane, gasoline driven. Rebuilt.

1—Quickway Truck Crane hoe shovel Model E, 4/10 cubic yard new 1946, used little mounted on Federal 6x6 truck chassis 10 tires, dual rear drives, front drive, powered by Hercules HXC, 779 cubic inch gas engine, all in excellent condition. A real buy.

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2—Bay City Tractor Shovels, Hoes or Cranes, "Pups" ¾ yd., ¾ swing, Crawler mounted, gasoline driven.

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1—Bay City Model 15, Truck Crane, 35 ft. Boom, Hoe and Shovel, mounted on A. C. Mack Chassis.

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Northwest Model 80-D 2½ yd Diesel shovel.
Northwest 26 1¼ yd Diesel Shovel. New 1949.
Northwest 26 1½ yd Diesel Shovel/Backhoe.
P&H 255A 20 Ton Truck Crane. Excellent.
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Michigan TLDT Truck Crane 12 Tons. Bm 50'.
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Lorain Motocrane MC-14. Practically new.
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Koehring 605 1½ yd. Diesel Shovel.
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Lima Paymaster 1 yd. Diesel Shovel.
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Link-Belt K-520, Diesel Shovel, 3 yds.
Link-Belt K-595 Dragline, 2½ yds. Diesel.

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Erie 492 barrels cement 160 yd. agg. Complete.
B-K 450 barrels cement 100 Ton agg. Complete.
Butler 100 ton 3 compt. agg. 3 yd. batcher.
Butler 310 Bbls. cement No. 5 bin weigh batcher.
B-K 400 Bbls. Cement, 125 Tons Agg. Complete.
Aggre. 150 yd. 3 compt. bin. Butler 1 yd. batcher.
B-K 110 bbl. bulk cement bin Richardson scales.
F-S cement bin 600 bbls. weigh batcher, compl. Exc.

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Hetherington-Berner Heavy Duty Mete-Paver.
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Steel 35' stiff leg derrick 100' boom.
American 20 ton stiff leg derrick 90' boom.
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Koehring 34-E Twin Batcher Paver.
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Rex 28-S Builders Mixer. Elec. New 1947.
28-H Ransome Builders Mixer. Elec.
Koehring 56-S stationary Mixer. New '50.

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Blaw-Knox and Heltzel 8100 ft. 9"x9"; 10,000 ft. 8"x8" and 3000 ft. 10"x8".

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PUMPS: 1—950 GPM, 310 ft. head, with 100 H.P., 2200 volt, motor. 1—6", 3 stage, 1250 GPM, 475 ft. head with 200 H.P. 440 volt motor. 1—10", 3 stage, 2000 GPM, 475 ft. head, without 300 H.P. motor. 2—NEW portable 4" centrifugal with 64 H.P. Chrysler IND52 engine.

BLAST HOLE DRILL: Bucyrus Erie 27-T, diesel, 6⅞" bits.

PUMPS: Centrifugal 905 GPM at 310 ft. head, 1750 RPM, 100 H.P., 2200 volt. 2—6", 3 stage, 1250 GPM at 475 ft. head, 200 H.P., 440 volt.

DIESEL MOTOR: 122 H.P. Caterpillar D13-000 complete with clutch, V-belt pulley and spare parts.

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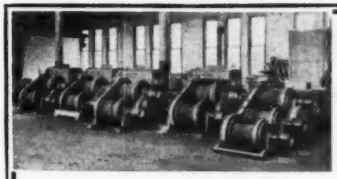

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4—75 HP 3/drum American elec. hoists. 3/60/220/440. $6,000 each.

4—100 HP 2/drum American gas hoists $5,500 each.

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AIR COMPRESSORS
Portable—2 Stage

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1—21 ton CMC 2-compt. bin with 26 cu. ft. sliding weigh-batcher. Excellent condition. $1,350.00.

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PAVER

1—Rex Model 34E Dual Drum Paver powered with Waukesha six cylinder gasoline engine, Rex mechanical man, batch meter, 35' distributing boom, serial #GG-126. Completely reconditioned and ready for paving.

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1—Model C-11 Tournapull with Buda engine.

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3—Allis Chalmers Model HD-10W Tractors with 471-RC-5 GMC Diesel Engines, new LeTourneau Power Control Units, new Gar Wood Blades, two straight, one angle. In excellent condition.
1—Model D7 Caterpillar Tractor with LaPlant Choate Angle Dozer, rear double power control unit.
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100 Tons	8" H	31#	40'	In Stock
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100 Tons	12" H	65#	40'	In Stock

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100 Tons Larssen I Steel Sheet Piling 46'
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Link-Belt ½ yd. Model LS-40 equipped with crane and backhoe.
Parsons Trencher, Model 25.
Caterpillar D8 Tractor with bulldozer.
Allis-Chalmers HD-19 Tractor with bulldozer.
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Adnun Black Top Spreader.
McCarthy Horizontal Drill, truck mounted.
All of this equipment is now operating and may be inspected in the vicinity of Dover, Delaware.

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FS-2236, Engineering News-Record
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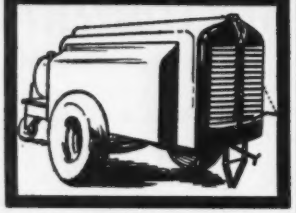

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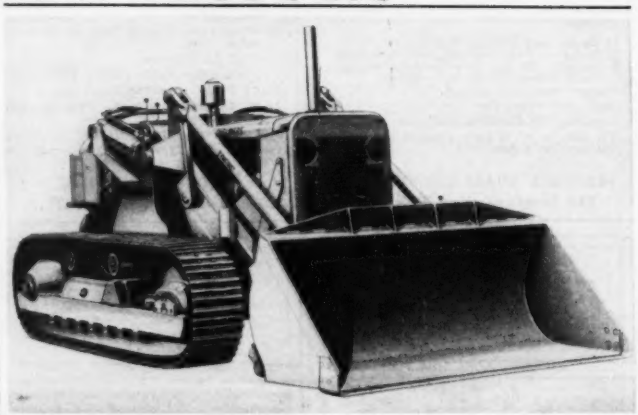


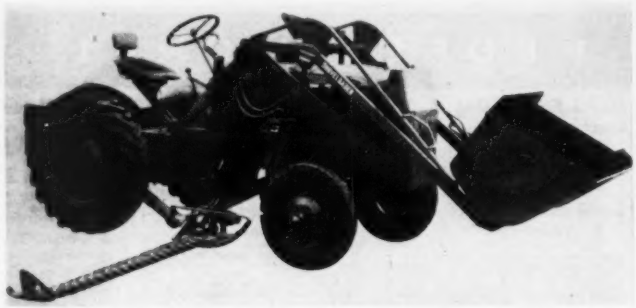
A-C Tractors can now have front-end shovel

A complete line of shovel-mounted tractors, with standard bucket capacities up to 4 yards (light material buckets up to 7 yards) is now available in all four models of Allis-Chalmers crawler tractors, according to a joint announcement made recently by that company and the company which makes the scoops.

The bucket sizes vary in capacity to match the weight and horsepower of each tractor, the HD-9G mounts a 2-yard bucket and dumps at a maximum height of 11 ft, 4½ in. The HD-15G employs a 3-yard bucket and has a dumping height of 12 ft, 8 in., while the huge HD-20G torque-converter-driven tractor uses a 4-yard bucket, dumping at a height of 13 ft, 5 in.

Special buckets for handling light materials, such as snow and soft coal, are available for all four Tracto-Shovel models—range in capacity from 2 yards on the HD-5G to 7 yards on the HD-20G.

To increase the versatility of these units, there is also available for most models a variety of interchangeable attachments, including special buckets, snow plows, bulldozer blades and rock forks. By simply removing four pins, each of these units may be interchanged with one another. ALLIS-CHALMERS MANUFACTURING COMPANY, TRACTOR DIVISION, MILWAUKEE 1, WISCONSIN.



Shoveloader sports mower attachment

Among the features of the new 3-B Shoveloader is the design which permits installation and operation of a Case VAI-5 mower attachment without interference with the machine itself or with its scoop. The bucket also has a parallelogram mechanism which automatically keeps it level while raising or lowering the shoveloader's scoop or bucket.

Alternate, interchangeable attachments are ⅜-yd material bucket, ½-yd loose material bucket, ¾- or 1-yd coal or snow bucket, bulldozer, lifting crane, fork lift or motor-driven sweeper. LULL MANUFACTURING COMPANY, 3612 EAST 44TH STREET, MINNEAPOLIS 6, MINNESOTA

(Continued on page 103)

LOOK TO P&H FOR THE BIG 3

1 *Greater Stability*

gives you more digging power at the tooth point — without tipping strain.

2 *More Modern Design*

***True tractor type crawlers** reduce maintenance; **live roller circle** gives livelier swings; **low pressure hydraulic control** is faster, smoother; **all-welded construction** means greater strength.*

3 *Better Service*

Adequate dealer parts stocks are supplemented by 20 strategically located branch offices and warehouses. One complete plant and warehouse devoted exclusively to repair parts assure prompt service.

P&H

POWER SHOVELS AND CRANES
4404 West National Ave.
Milwaukee 14, Wis.

HARNISCHFEGER
CORPORATION

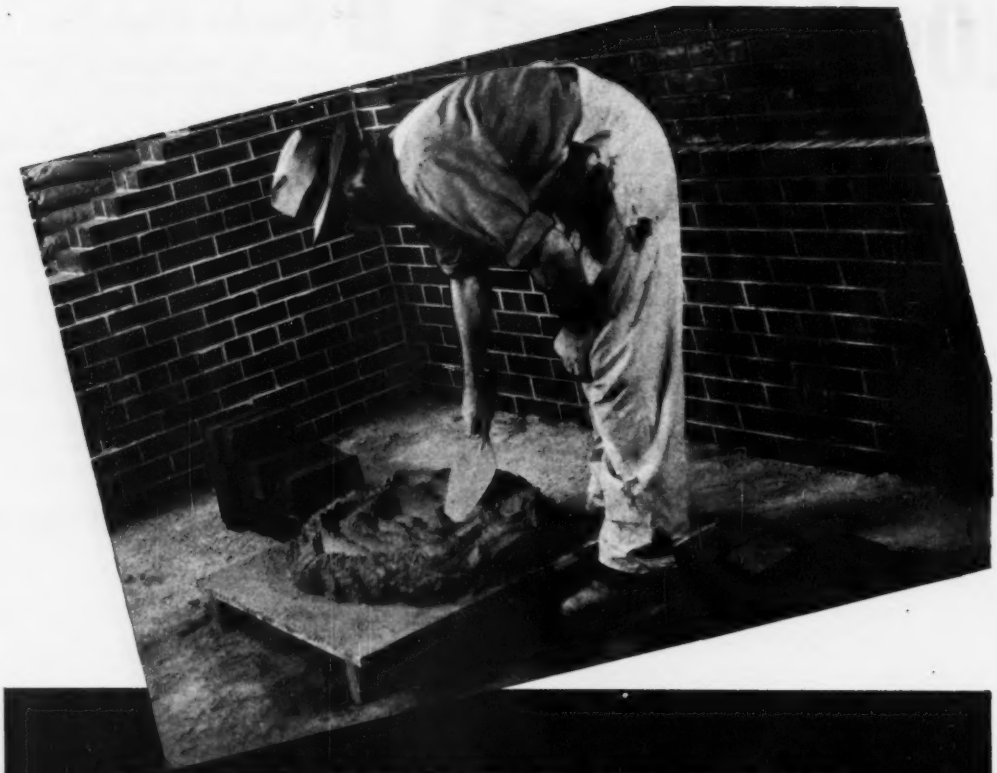
See your P&H Dealer

P&H Excavators and Truck Cranes are more easily converted for the various types of service shown below — with hoist and digging drums on one shaft, the need for auxiliary shafts and gearing is eliminated. You also have a choice of gas, Diesel or electric power. Ask for literature on the size you need.

the P&H *Line*

SHOVEL · DRAGLINE · BACKFILLER · CRAWLER CRANE · MAGNET CRANE · TRENCH HOE · PILE DRIVER · TRUCK CRANE

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FAB. HOMES



BRIXMENT

is more plastic!

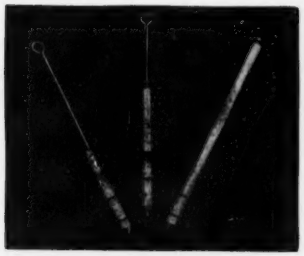
ONE of the most outstanding characteristics of Brixment is its plasticity. Its working qualities are comparable to those of lime putty. Because of this unusual plasticity, a bag of Brixment will carry three full cubic feet of sand, and still make good workable mortar. . . .

This exceptional workability makes it easy for the bricklayer to secure neat, clean brickwork, with the brick properly bedded and the joints well filled. The final result is a better job, at lower cost.

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

Portable signal flasher

Utilizing a set of three standard 90-volt batteries in series, this lightweight portable electronic signal flasher assures longer battery life and greater long range visibility since it has no moving parts or filaments to burn out. Of cold cathode tube design, it emits a sharp brilliant flash of light clearly visible for approximately a mile under normal conditions. It can be carried by the handle as shown in the photograph above for use wherever signaling is required. An off-on switch as well as an outside knob to control the number of flashes per minute is provided. The tube is protected by a clear or colored precision Fresnel lens. Its aluminum case measures 6¼ x 10 in., and weighs only 8½ lb. HALEDY ELECTRONICS COMPANY, 57 WILLIAM STREET, NEW YORK 5, N. Y.



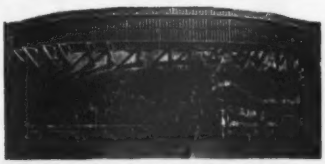
Versatile magnet

A complete new line of hand operated load-releasing tubular Magnetools are now available. They are used for entering small openings, such as blind

(*Continued on next page*)

ATLAS SPEED SYSTEM OF STEEL FORM CONSTRUCTION

Here's Your Solution To High Cost Form Labor



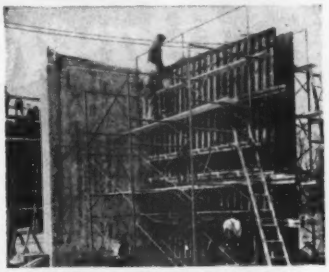
The same forms can be used for walls, piers, circular tanks, sewers, tunnels, manholes, etc

STEEL FORMS—Good for reuse again and again on job after job indefinitely without repair. Cut material costs way below wood.—Many records of 400-500 and more uses.

SPEED Steel Forms—Can be set up, stripped, cleaned and moved in way less time . . . No heavy bracing needed.

Atlas Speed Steel Forms go together with wedge clips . . . NO special fastenings or wrenches needed. NO studs on walls—Fewer posts and girts.

Let's talk it over. Just send us prints of the job. Glad to give you Layouts, Costs Studies and complete facts to fit your individual conditions. Supervision by specialists available at no extra cost to you.



Write Department *RN* for complete facts.

IRVINGTON FORM AND TANK CORP.
20 Vesey Street, New York 7, N.Y.

Atlas *Labor-Saving* Concrete Forms for every Purpose

TAC does what no other tool can do!

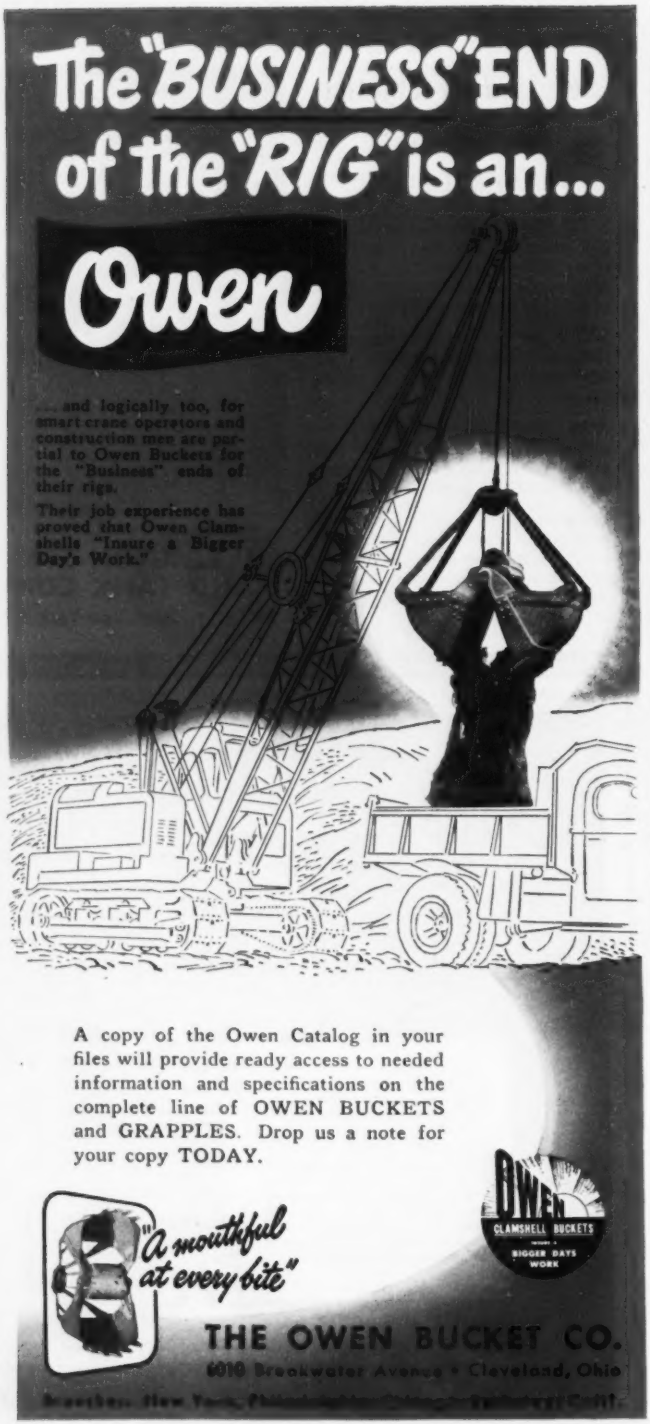
AT LAST! AN OPEN-END RATCHET WRENCH — the world's first true *universal* wrench. A patented design for connections on tubing, rods, piping, conduit, studs, etc. Sixty-four socket sizes from ⅜" to 4". Smallest effective ratcheting arc yet—5° to 7½°. TAC will also do every job any ordinary ratchet wrench will do: one TAC set replaces literally dozens of single-purpose hand tools.

makers of advanced tools for industry

TAC

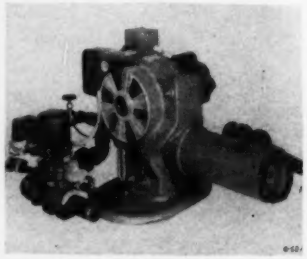
TAC is the registered trademark of

TUBING APPLIANCE CO.
7112 South Victoria • 10321 Anza Ave. • Los Angeles, Calif.


The "BUSINESS" END of the "RIG" is an...
Owen
... and logically too, for smart crane operators and construction men are partial to Owen Buckets for the "Business" ends of their rigs.
Their job experience has proved that Owen Clamshells "Insure a Bigger Day's Work."
A copy of the Owen Catalog in your files will provide ready access to needed information and specifications on the complete line of OWEN BUCKETS and GRAPPLES. Drop us a note for your copy TODAY.
"A mouthful at every bite"
OWEN
CLAMSHELL BUCKETS
BIGGER DAYS WORK
THE OWEN BUCKET CO.
6010 Breakwater Avenue • Cleveland, Ohio

New Products . . .

holes, around machinery, conveyors and benches. Also usable for removing metallic sludge from coolant tanks and boring into tumbling media or carburizing materials to remove parts. They are permanent and not electric, are said to be resistant to water, oil and gasoline. Diameters range from $\frac{1}{16}$ in., to $2\frac{3}{8}$ in. MULTIFINISH MANUFACTURING COMPANY, DEPARTMENT R, DETROIT 7, MICHIGAN.



Combination burner handles oil or gas

Here is a burner which will burn gas in low-cost areas and may quickly be changed over to burn oil when necessary. Advantages of the new line of burners include a forced air draft system which provides a single blower fan for all air for combustion, assuring perfect control to the fire under all atmospheric conditions. They can be regulated to burn the proper amount of gas or oil for the requirements of any particular installation, says the maker. Modern electronic controls are used to guarantee that the main gas valve cannot be opened unless a pilot flame is established. Models range from 720,000 maximum Btu gas burned in the AMG-2 size to 8,700,000 maximum Btu gas burned in the AMG-7 size. CLEAVER-BROOKS COMPANY, 326 EAST KEEFE AVENUE, MILWAUKEE 12, WISCONSIN.

Motor-driven trolley

The outstanding feature in this new motor trolley is a fluid coupling which completely replaces expensive accelerating speed controls, lowering the usually high maintenance cost of this particular piece of equipment. The motor in the new Yale trolley starts unloaded and comes up to 85% of full speed before starting the load. There is, therefore, no prolonged inrush of current. Also no metal-to-metal contact in the coupling itself, consequently there is no wear. Maintenance requirements are only an occasional check of oil level.

Since the motor starts free of any

(Continued on page 107)

Interchangeable Parts

SAVE INSTALLATION and MAINTENANCE TIME

WITH **CHAPMAN** *Standardized* **SLUICE GATES**

You'll make faster, easier installations with Chapman's Standard Sluice Gates. Interchangeable stems and couplings assemble quickly in the field — without match-marking.

And you'll save time on maintenance, too. Chapman's interchangeable repair and replacement parts always fit—without struggle or alterations.

Three types of control available—your choice of manual, hydraulic cylinder or motor are designed to give you easy, dependable operation. Learn the full time and money saving facts. Send today for your copy of Chapman's Standard Sluice Gate Handbook.

THE CHAPMAN VALVE MFG. CO.

INDIAN ORCHARD, MASSACHUSETTS

"These wire rope figures really opened our eyes!"

"Couple of years ago, the boss asked me to start checking our wire rope costs. He wanted a little system of records that would tell us what each rope was doing, and how much work we were actually getting from it. Figured we could learn the brand that would last the longest—and cost the least—on our type of work.

"So I started keeping track. In our case, the jobs involving rope boiled down to a matter of tonnages moved. Wasn't at all hard to record what each rope accounted for in its lifetime. When I'd been checking long enough for the figures to have some meaning, I showed 'em to the boss. By then I could tell which make of rope was doing the best job for us, costwise and every way. The figures really opened our eyes!"

These men weren't the first to learn the value of checking rope performance. Many users of Bethlehem wire rope follow the practice regularly. We're always glad to see it, for it enables actual comparisons between brands . . . and we know that in any such comparisons, Bethlehem rope will stand out from the crowd.

Here's a fair suggestion: over a period of time, stack the Bethlehem product against any other brands of your choice. Keep tabs on them all, and at intervals study your figures. Our guess is, those records of yours will prove beyond question the solid economy—the long-term economy—of Bethlehem wire rope.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

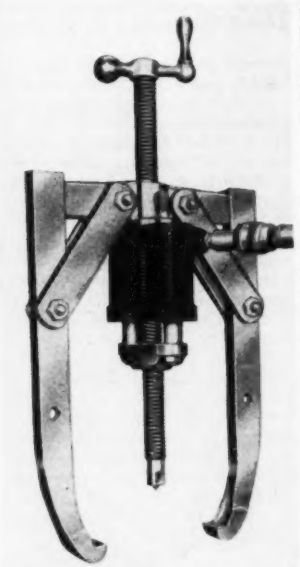
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

LET YOUR RECORDS TELL YOU!

New products . . .

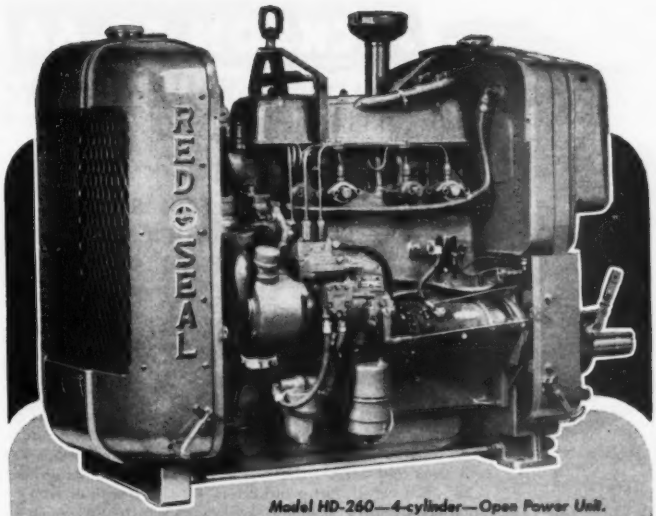
load and is loaded gradually by the fluid coupling, acceleration is smooth and gradual without vibration or jerking. This greatly reduces swinging or pendulum action by the load, and with this feature open containers of liquid are not as likely to spill. The motor also eliminates the need for a motor brake on the trolley.

Available from ½ to 12-ton capacity, it can fit the usual range of track sizes for which Yale hoists and trolleys are available. (PHILADELPHIA DIVISION) YALE & TOWNE MANUFACTURING COMPANY, 11000 ROOSEVELT BOULEVARD, PHILADELPHIA 15, PENNSYLVANIA.



Hand pullers adapted to hydraulic power

Three of the popular sizes of OTC Grip-O-Matic pullers can now be used with the new Power-Twin hydraulic puller. Only slight adjustments are necessary to make the changeover, which makes the pullers more efficient and increases their range of utility. Pulling jobs are made safer because of the remote control feature. As shown in the photo above, the Power-Twin ram can easily and quickly be detached from the puller and used effectively on the company's push-pullers or on a bench or pedestal press. OWATONNA TOOL COMPANY, 380 CEDAR STREET, OWATONNA, MINN.



Model HD-260—4-cylinder—Open Power Unit.
25 to 50 shaft horsepower for intermittent duty.
20 to 40 shaft horsepower for continuous duty.

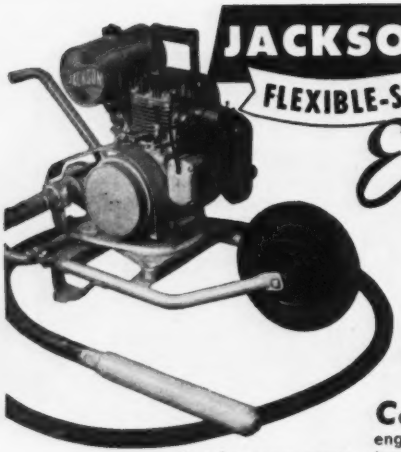
CONTINENTAL
RED SEAL
ENGINES
COST
...Less to Run...
Less to Maintain

PARTS AND SERVICE
EVERYWHERE

CONTINENTAL MOTORS · Powerful as the Nation · AMERICA'S STANDARD

YOU CAN PLACE FULL CONFIDENCE IN THE PRODUCT OF THE MANUFACTURER WHO HAS CHOSEN CONTINENTAL RED SEAL AS THE HEART OF HIS MACHINE

Continental Motors Corporation
MUSKEGON, MICHIGAN



JACKSON FS-6A

FLEXIBLE-SHAFT VIBRATOR

Excellent

FOR BOTH THICK and THIN SECTIONS – ALL TYPES OF GENERAL CONSTRUCTION

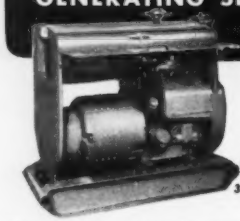
COMPACT and powerful (4.7 HP engine of national reknown), built to take severe usage. Available with vibrator heads in 3 sizes and flexible shafting in 7′ and 14′ lengths up to 28′. Full-swivel, dirt-proof base. Furnished with or without wheelbarrow mounting. Frequency is instantly adjustable over a wide range. May be quickly converted to wet or dry grinding and drilling. An outstanding fine concrete vibrator for general construction work. ***For Sale or Rent at Jackson Distributors.***

ELECTRIC TAMPER & EQUIPMENT CO.

LUDINGTON, MICHIGAN

POWER FOR TOOLS
...LIGHTS FOR SAFETY

FAIRBANKS-MORSE
GENERATING SETS



Available in capacities from 600 to 35,000 watts.

Construction and repair crews working away from high power lines will find a dependable source of electric power in a Fairbanks-Morse Generating Set.

These generators are widely used by railroads, lumber camps, oil field operators, government services, public works contractors and many others, because of their ability to take hard knocks and still deliver power.

Send for booklet describing the complete line of Fairbanks-Morse Generators. Write Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE,
a name worth remembering

WOOD WON'T DECAY

(When Pressure-Treated)

• Pressure-treatment with the right solution to meet the conditions of use will multiply the service life of wood—and only *pressure*-treatment does the job right!

Write for Booklet SW4 to:

KOPPERS

KOPPERS COMPANY, INC.
Wood Preserving Division
Pittsburgh 19, Pa.

MANUFACTURERS' PUBLICATIONS

Dredges—After a brief history about the company, this 49-page spiral-bound book explains different types of dredges, grapple, ladder, self-propelled hopper, plain suction and cutterhead pipeline dredges. Every page has several pictures describing the use of their various types for real estate development, land filling, sediment removal, channel maintenance and improvement, canal digging, dam and airport fill etc. A chapter at the end includes information on how to determine the proper equipment for any job and the four-day erection-assembly method for their portable rigs. Catalog 825. ELLICOTT MACHINE CORPORATION, BALTIMORE 30, MARYLAND.

Portable crushers—This 12-page bulletin No. 265 E is crammed full of information about the Telsmith line of crushers, feeders, loaders etc. Included are portable type (on steel or rubber wheels), "Junior" crusher-screener, portable crushing and loading plant, portable and semi-portable primary and secondary crushers, feeders, washing-screening setups, and finally the complete crushing screening-loading plant. Concise tables contain information on jaws, gyratories, rolls, etc. SMITH ENGINEERING WORKS, MILWAUKEE 12, WISCONSIN.

Electric brakes and clutches are the subjects of a complete new handbook which contains information on the design and application for industrial use. It incorporates unit sizes, mounting and engineering performance specifications. The handbook is No. 701-A. WARNER ELECTRIC BRAKE & CLUTCH COMPANY, BELOIT, WISCONSIN.

Industrial electronic tubes—A 28-page booklet has been entirely devoted to industrial electronic and special purpose tubes. Designed for industrial use, the booklet furnishes technical specifications on hundreds of tubes used for processing, control, production, research, sorting, weighing, measuring and a host of other jobs. Nationally known brands, such as Westinghouse, General Electric, Sylvania, Dumont are listed as well as special purpose types like Kenotrons, Pilot Lamps, Ignitrons, trigger tubes and the like. MILO RADIO & ELECTRONICS CORPORATION, 200 GREENWICH STREET, NEW YORK 7, NEW YORK.

Payloaders—The Hough Company has just published a comprehensive 12-

(*Continued on page 111*)

AIR DOES IT-

STEERS CRAWLER

SETS TREAD LOCK

CROWDS - RETRACTS

LORAIN 820

At the touch of these levers, AIR does the work in the Lorain-820 in the 2-yd. class. Greater ease of control and maneuverability, less operator fatigue — more production is yours with "820" Air Controls . . .

STEERING . . . Air Does It!

Full *air control* of Crawler Steering — from operator's cab — with turntable in any swing position.

SETS TREAD LOCK . . . Air Does It!

Full air controls of Tread Locking Pawls, from operator's position with turntable in any position of swing.

JAW CLUTCHES . . . Air Does It!

Travel and Crowd turntable Jaw Clutches shifted by full air control.

CROWD BRAKE . . . Air Does It!

Full *air control* of Crowd Brake through hand trigger on lever. No need to relinquish machine control.

AIR ASSIST for Crowd & Retract . . . Retains Clutch "Feel"

Reduces operator effort — permits full "feel" of crowd, retract, travel clutches.

STANDBY FEATURES . . .

All air controls are equipped for mechanical or manual auxiliary operation. *Immediate* take-over— no adjustments, no loss of time.

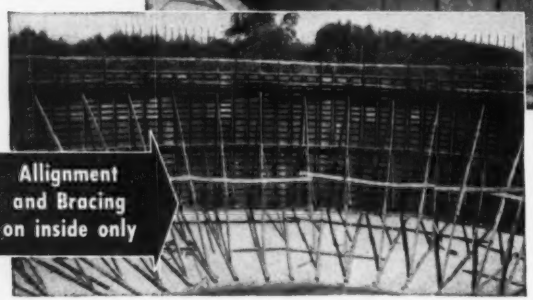
THE THEW SHOVEL CO., LORAIN, OHIO

THE NEW LORAIN

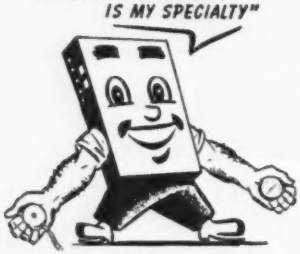
Two 80' Digester Tanks UNI-FORMED with... *Accuracy Speed Economy!*

5 Men
Erected and Braced
4500 sq. ft. in 20 hrs.
Walls Checked within ¼" of True Round
SAFETY FIRST!
Clear Working Area . . .
Faster Forming . . . Easier
Concrete Placement

Part of Tucson Sewage Treatment Plant
M. M. Sundt Construction Co., Contractors



Only UNI-FORMS Provide 3-Way Savings . . . Time . . . Labor . . . Materials



THE JOB: Form and pour two 80' digester tanks. Walls vary from 15 to 21 inches, are 32 feet high. Tolerance ½". Forms must check within ¼" of true round. Concrete to be of high density, watertight consistency with a smooth face.

THE PROBLEM: Maintain required tolerances. Form and hold two pours—18 and 14 ft. high. Obtain maximum speed and economy in entire forming and pouring operation.

THE RESULT: UNI-FORMS were used to form the job. In spite of the high lift and accuracy required, alignment and bracing was necessary on 1 side only. Accuracy was maintained throughout. Erection of panels was fast—5 men erected 4500 sq. ft. of first lift in 20 hours. Finished concrete surface met specifications for smoothness. Contractor expects to finish job several months ahead of schedule. Congratulations to M. M. SUNDT CONSTRUCTION CO. for a job well done.

Universal FORM CLAMP CO.
Concrete Form Specialists Since 1912

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- HOUSTON, TEXAS, 2314 Preston Ave.
- SPRINGFIELD, ILL., 2522 Poplar Ave.
- EUCLID, OHIO, 24901 Lakeland Blvd.
- NEW YORK, N. Y., 51 E. 42nd St.
- BALTIMORE, MD., 661 S. Monroe St.
- SWAMPSCOTT, MASS., 51 Barnstable St.
- HATO REY, PUERTO RICO, Ave. Munoz Rivera 84—Stop 27½

Service Wherever You Build... Coast-to-Coast

Manufacturers Publications . . .

page catalog entitled "Profitable Construction With PAYLOADERS". It's slanted for contractors, public works departments, utilities, mines and pits, and contains many on-the-job photos showing earthmoving, materials handling, lifting and carrying jobs. Payloader accessories are shown, as well as job data and machine specifications. It's catalog No. 217 and is obtainable from THE FRANK G. HOUGH COMPANY, 832 SEVENTH STREET, LIBERTYVILLE, ILLINOIS.

Liquid meters—A new bulletin intended to guide the proper selection of meters for measuring more than 200 liquids with varying corrosive characteristics is currently available from the Rockwell Co. Included is data on liquids from absorption oil to zinc chloride and liquids encountered in food, beverage, paint, chemical process, refrigeration and many others. Meters measure in gallons, Imperial gallons, barrels or litres; have totalizer capacity up to seven figures and are available in six types of registers. The bulletin is designated as No. OG400. ROCKWELL MANUFACTURING COMPANY, 400 NORTH LEXINGTON AVENUE, PITTSBURGH 8, PENNSYLVANIA.

Coal and material handling equipment—This is a 12-page illustrated bulletin describing complete line of flight and belt type portable conveyors as well as under-car unloaders for handling coal, coke, sand, gravel, and other bulk materials. Specification data is given on both electric and gasoline-powered models, and on hand-move and self-propelled conveyors. Copies are available upon request. to LAKE SHORE ENGINEERING COMPANY, IRON MOUNTAIN, MICHIGAN.

Electrical measuring instrument—Information on how to select electrical measuring instruments is provided in a new 30-page instrument booklet available from Westinghouse. Seven basic selection factors are explained. Different types of instruments available in each major classification are listed on a full-page check chart. Four typical selection problems are solved to help the reader make his personal selections. Complete lines of portable, switchboard, panel, recording, and socket instruments are described and illustrated along with the functions of each. For a copy of Booklet B-4696, write to WESTINGHOUSE ELECTRIC CORPORATION, Box 2099, PITTSBURGH 30, PA.

ADVERTISERS IN THIS ISSUE

Abrams Aerial Survey Corp. 85
Acker Drill Co. 68
Adams Mfg. Co. J. D. 11
Atlantic Steel Corp. 79

Baldwin-Lima-Hamilton Corp. 74, 75
Behlen Mfg. Co. 20
Belmont Iron Works 79
Berger & Sons, Inc., C. L. 2
Bethlehem Steel Co. 106
Blaw Knox Div., Blaw Knox Co. 70
Borden Metal Products 10
Boston Woven Hose & Rubber Co. 37
Byers Co., A. M. .....2nd Cover

Celotex Corp., The 45
Cement Gun Company 65
Chapman Valve & Mfg. Co. 105
Chevrolet Motor Div., General Motors Corp. 41
Cities Service Companies 64
Complete Machinery & Equipment Co. ... 82
Conners Steel Co. 7
Continental Motors Corp. 107

Dodge Corp., F. W. 100
Dow Chemical Co. 4
Dravo Corp. 57

Economy Forms Corp. 57
Electric Tamper & Equipment Co. 108
Eppinger & Russell Co. 70

Fabreeka Products Co., Inc. 86
Fairbanks-Morse Co. 108
Farr Co. 51
Foster Co., L. B. 67
Foundation Equipment Corp. 48
Four Wheel Drive Auto Co. 63

General Tire & Rubber Co. 54
Goodyear Tire & Rubber Co. 1
Griffin Wellpoint Corporation 78
Gunite Concrete & Construction Co. 79
Gunite Construction Corp. 68

Harnischfeger Corporation 101
Hensley Equipment Co. 65
Hetherington & Berner, Inc. 48
Howard Steel Co. 68

Inland Steel Co. 18
International Harvester Co. 72
Irving Subway Grating Co. 73
Irvington Form & Tank Corp. 103

Jones & Laughlin Steel Corp. 49
Joy Mfg. Co. 52

Koppers Co., Wood Preserving Div. 108

Lee & Son, W. W. 80
Leyman Mfg. Co. 55
Lincoln Electric Corp. 71
Lock Joint Pipe Co. 56
Louisville Cement Co. 102

Mac Arthur Concrete Pile Co. 80
Master Builders Co. .....3rd Cover
McKiernan-Terry Corp. 77
Morin Mfg. 66
Moretrench Corp. 73
Murphy Diesel Corp. 3

Naylor Pipe Co. 14
Northwest Engineering Company 3

Ohio Locomotive Crane Co. 85
Owen Bucket Company 104

Pennsylvania Drilling Co. 70
Pipe Linings, Inc. 8
Pittsburgh-Des Moines Steel Co. 82
Plasteel Products Co. 52
Portland Cement Assn. 46
Posey Iron Works, Inc. 50
Pressure Concrete Company 83

Raymond Concrete Pile Co. 53
Republic Steel Corp. 61
Ryerson & Sons, Inc., Jos. T. 78

Sauerman Bros., Inc. 83
Shell Oil Co. 12, 13
Silent Glow Oil Burner Corp. 59
Smith Blair, Inc. 81
Spencer, White & Prentis, Inc. 83
Sprague & Henwood, Inc. 85
Stang Corp., John W. 70

Texas Company .....4th Cover
Thew Shovel Co., The 109
Timber Engineering Co. 60
Timken Roller Bearing Co. 6
Tinney Drilling Company 83
Torrington Co., Bantam Bearings Div. .. 9
Trailer Village, Inc. 68
Tri-Lok Co. 57
Tubing Appliance Co. 103

U. S. Pipe & Foundry Co. 16
Universal Atlas Cement Co. 22
Universal Concrete Pipe Co. 84
Universal Form Clamp Co. 110

Vickers, Inc. 15
Vulcan Iron Works 69

Warner & Swasey Co. 42
Williams Co., J. H. 79
Wood Co., R. D. 38

Professional Services **99**

SEARCHLIGHT SECTION
(Classified Advertising)

Employment
Positions Vacant 90, 91
Positions Wanted 92
Selling Opportunities Wanted 92
Employment Services 92

Special Services
Contract Work 92

Educational
Schools 90

Business Opportunities
Offered 92

Equipment
(Used or Surplus New)
For Rent 99
For Sale 92-99
Piling 96
Pipe 97
Rail 99
Surveying Instruments 98

Wanted
Equipment 92

ADVERTISERS INDEX **89**

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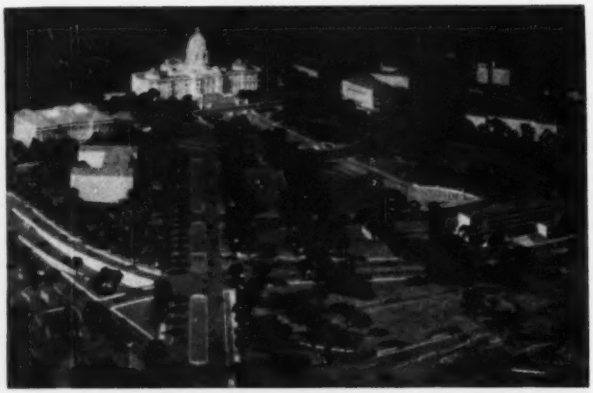


WIDE BOULEVARDS, modern architecture and extensive landscaping will replace slum areas and substandard dwellings to restore the grandeur of Minnesota's 55-year old State Capitol.

Wider streets and better housing

A letter from ST. PAUL

After weathering their biggest flood in 70 years with relatively little damage and digging out from under 90-in. of snow last winter, loyal residents of St. Paul, Minn., still contend it's a city where . . . "good business combines with good living" . . . and they are right. Business is booming (annual payrolls total $350 million), and plans are being readied for the biggest program of public improvements in the past quarter-century.

Damages from the record breaking flood last spring—which crested 0.4 ft below the all-time record of 1881—included only $8,000 for pumping out basements, plus $31,000 of Red Cross relief for 345 families.

• **Capitol approach improvement**—High on the agenda of public improvements is the enlargement and improvement of the State Capitol grounds and approaches—long an eye-sore of the first magnitude—and the construction of a State Veterans Service Building. After five years of planning and slow-moving construction—due chiefly to a reluctance to displace residents in the unsightly rental flats to be demolished—prospects are for an increased tempo of construction.

State legislation was passed in 1945 authorizing the Capitol Approach improvements. A State Veterans Service Building Commission was appointed to supervise the work and $4,000,000 of bonds were issued, to be divided about equally between purchasing property and the construction of the Veterans Service Building.

St. Paul will contribute to the improvement by widening and improving several blocks in the network of streets that will connect with the new capitol approach streets and boulevards.

• **Public housing fight**—Low-rent public housing is having its ups and downs in St. Paul. An estimated 30,000 of the city's 310,000 population live in substandard dwellings. Two large projects, now under construction, were authorized with little opposition.

Nevertheless the St. Paul Housing and Redevelopment Authority, headed by Fred W. Fisher, executive director, hopes to get this project reactivated following completion of the other two.

Housing of all types is tight in St. Paul—the vacancy ratio is ¼ of 1%, as compared with a normal average for the city of 3% to 7%. Both housing projects now under way are being rushed to completion at a total cost of $9,700,000.

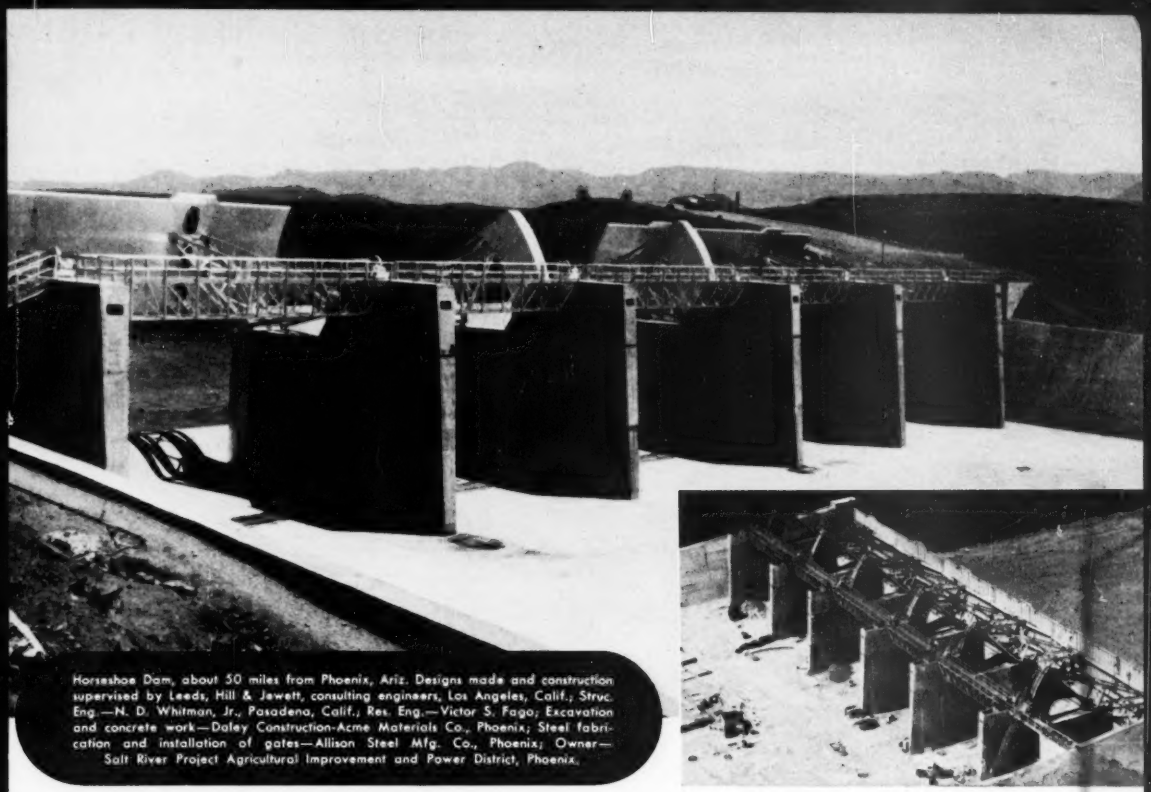
Complete occupancy is scheduled for next March. The two projects will total 832 units, containing, one, two, three and even four bedrooms. A fourth housing project is being planned, and the current goal is to get contract commitments on as many of the 2,000 units allowed by the U. S. Public Housing Administration as possible before the end of this month.

• **Long-range development** — St. Paul isn't going to stop with improving the approaches to the state capitol building. It has a long-range program—now reaching the final planning stage after three years of hard work—for the redevelopment of two 40-acre blighted areas just east and west of the state capitol. Preliminary plans call for 2,400 new dwellings in these substandard areas.

• **Free off-street parking**—More off-street parking is needed, especially within walking distance of the downtown shopping district. But Public Works Commissioner Milton Rosen and his chief engineer, George M. Shepard, are doing something about it. About two years ago they converted some tax-forfeited land, located on the fringe of the shopping district, into a free-parking area for 600 cars. A second free-parking area for 300 cars is being established on city park property just across the Mississippi River.

• **Second United Improvement Council**—A newly-appointed seven-man United Improvement Council is heading up studies for a seven-year program of public improvements. It is patterned after the original United Improvement Council of 1927 which was successful in getting $16,000,000 worth of city and county bonds approved for a five-year improvement program.

• **Proposals** of the new council have not yet crystallized but they include street paving and sewer enlargement programs; a traffic program to solve present Loop congestion problems; a new Mississippi River bridge in the downtown area; a railroad overpass over a river front road to relieve cross-town traffic congestion; a large highway grade separation; enlargement of the city hall and courthouse; park and playground and other improvements. Details of the program will be worked out by public works and various other city departments.



Horseshoe Dam, about 50 miles from Phoenix, Ariz. Designs made and construction supervised by Leeds, Hill & Jewett, consulting engineers, Los Angeles, Calif.; Struc. Eng.—N. D. Whitman, Jr., Pasadena, Calif.; Res. Eng.—Victor S. Fago; Excavation and concrete work—Daley Construction-Acme Materials Co., Phoenix; Steel fabrication and installation of gates—Allison Steel Mfg. Co., Phoenix; Owner—Salt River Project Agricultural Improvement and Power District, Phoenix.

POZZOLITH CONCRETE In Dam With World's Largest Radial Gates *

The increasing use of Pozzolith Concrete in noteworthy structures, like this $900,000 reservoir enlargement project, results from the fact that Pozzolith has proved to be the most economical means of meeting concrete requirements.

Here the problem was to obtain easy placeability yet maintain designed strength, since the piers were comparatively thin sections (see small photo) and heavy with steel reinforcement. The answer was Pozzolith . . . because it improves workability even with total water cut as much as 15%.

Pozzolith's cement dispersing, water reducing action, plus its entrainment of the *optimum* amount of air, also produced these concrete properties:

- MINIMUM SHRINKAGE
- GREAT DURABILITY
- LOW PERMEABILITY
- GOOD APPEARANCE
- HIGH BOND OF CONCRETE TO STEEL

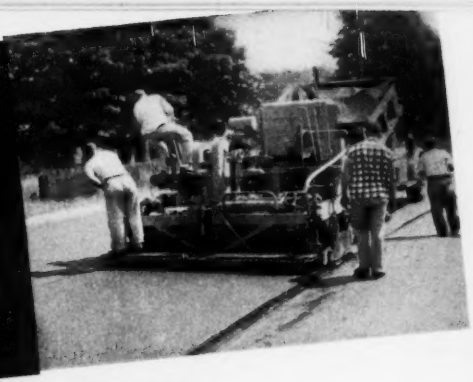
Over 8,000,000 cubic yards of Pozzolith Concrete placed in 1950 alone testify to Pozzolith's ability to produce better concrete at lower cost. *May we send you complete information and the Pozzolith booklet?*

**Close fitting pre-cast bascule weights which counterbalance the gates, also I-beam seal at bottom of gates, were precision grouted with EMBECO — another Master Builders' cement dispersion product, which produces non-shrink grout and mortar.*

the MASTER BUILDERS Co.

CLEVELAND 3, OHIO — Subsidiary of American-Marietta Company — TORONTO, ONTARIO

Paving another link in heavily traveled US-1



Texaco Asphaltic Concrete paving under heavy truck traffic on U. S. Route 1 in Stratford, Conn. Asphalt mix for this project was supplied by the Leverty and Hurley Co., Inc., of Bridgeport, Conn.

. . . with resilient, heavy-duty TEXACO ASPHALTIC CONCRETE

U. S. Route 1, which parallels the east coast from Maine to Florida, is one of the country's busiest highways. It carries exceptionally heavy traffic the year around, a large proportion of it truck traffic, plus a steady flow of vacationing motorists.

Many sections of heavily traveled Route 1 from New England south have been paved with the plant-mixed types of Texaco Asphalt construction, both Asphaltic Concrete and Sheet Asphalt. This year, the Connecticut State Highway Department has resurfaced US-1 in the city of Stratford with Texaco Asphaltic Concrete.

Because Texaco-paved highways safely absorb the heaviest impact, need no joints in their construction, suffer no ill effects from ice-control salts and are highly skid-resistant, they are able to deliver lasting service with a minimum of maintenance. That has been the story of their performance from the Atlantic to the Rockies for more than 45 years.

An illustrated booklet containing helpful information on the various Plant-mixed Types of Texaco Asphalt Paving can be secured without obligation by writing our nearest office.

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REG. T. M.

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